NOVEMBER, 1951

Telephone and Management Engineer

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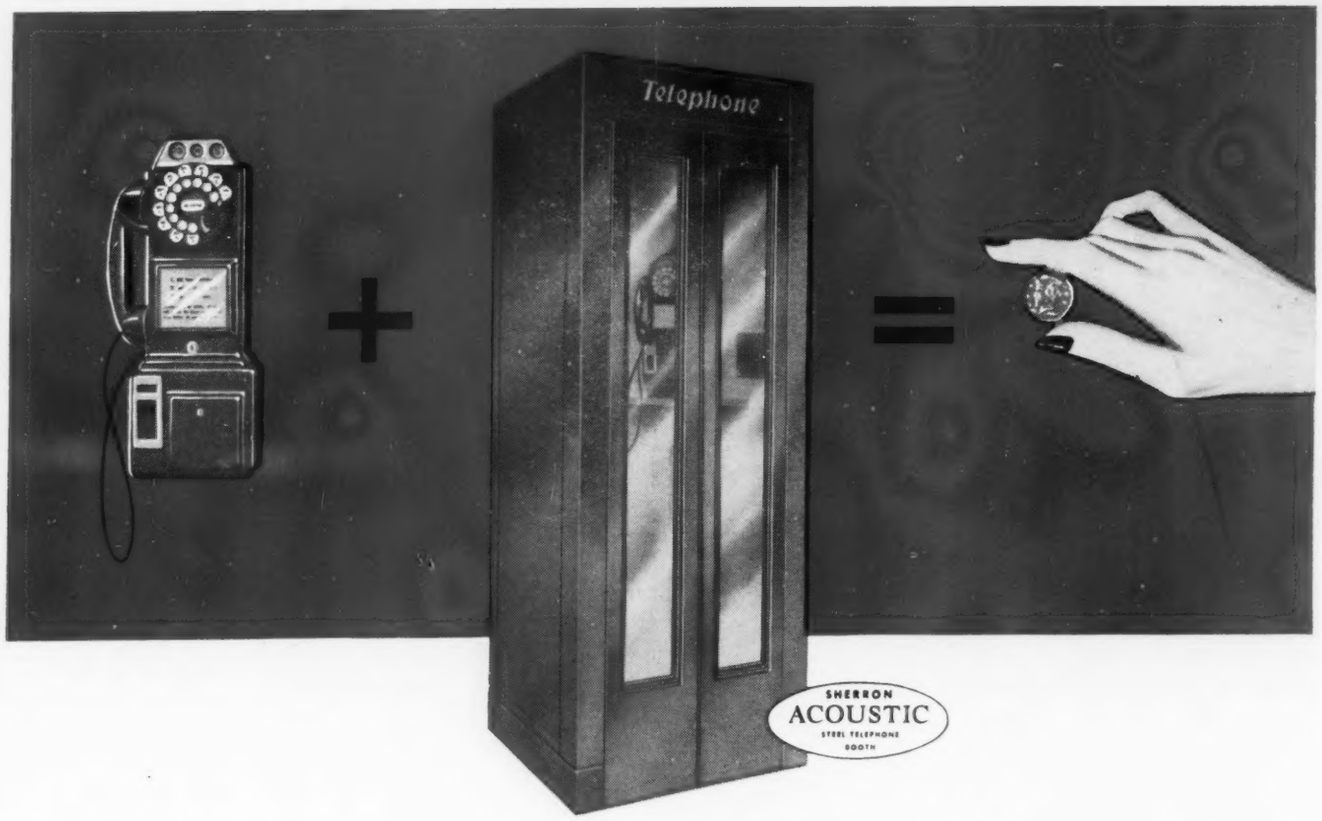
THE NATIONAL TELEPHONE MAGAZINE

Featuring In This Issue —

- Building & Maintaining Good Will, by John G. Schultheis
- Just Plain Telephone Folks, by Josephine Poppleton
- Modern Central Office Maintenance, by John S. Reed
- Washington Bureau Reports • Small Company Toll



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Across The Editor's Desk

The passing of HARRY B. MACMEAL (born MacMeallie) 82, on October 26 marked finis to a career unique in the Independent telephone industry. As author of the book "The Story of Independent Telephony", published in 1934, he narrated the story of the telephone magazines of which, at different times in his career, he was the owner & publisher. He founded our contemporary "Telephony" in 1901. From 1918 until 1921 he was the owner of "TELEPHONE ENGINEER". His final years were spent in association with W. L. (BUD) RUNZEL JR., of Runzel Cord & Wire Co., Chicago, as sales manager until his retirement on pension by the company. An accidental fall during the USITA convention in October was the immediate cause of his death. He was our good friend! May he rest in peace.

• • •

The final telephone convention of the year will be the meeting of the Florida Telephone Association annual convention on November 15-16. Following the usual formal invitation to attend was a clever "Summons" ordering an appearance at Daytona Beach, Fla. on the convention dates. An excellent program, plus a number of entertainment features, will assist Florida in closing the telephone convention season for 1951.

• • •

We have heard LEON F. ROBERTS, vice president of the Ohio Consolidated Telephone Co. Portsmouth, Ohio, make good speeches at many of the telephone conventions we have attended. He is now making a name for himself as the author of "Telephone Lines", a small pamphlet for subscribers. His issue for November is an excellent job of public relations and we suggest telephone folks get a copy.

The National Telephone Magazine

Telephone Engineer and Management

NOVEMBER, 1951 VOL. 55, NUMBER 11

Editor, RAY W. SMITH • *Advertising Director,* ROY F. SMITH
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FRONT COVER

Mike Bogan, 5th grade student at Washington School, Baxter Springs, Kans., cannot attend regular school classes due to illness. However, through cooperation of Bill Hollis and Raymond Swaney of the Kansas State Tel. Co. and the Missouri-Kansas Amateur Radio Society, Mike keeps up with his school work by means of a special inter-communication set.—(Photo, courtesy of Miss Ruth Thomas, City Editor, *The Baxter Springs (Kans.) Citizen.)*

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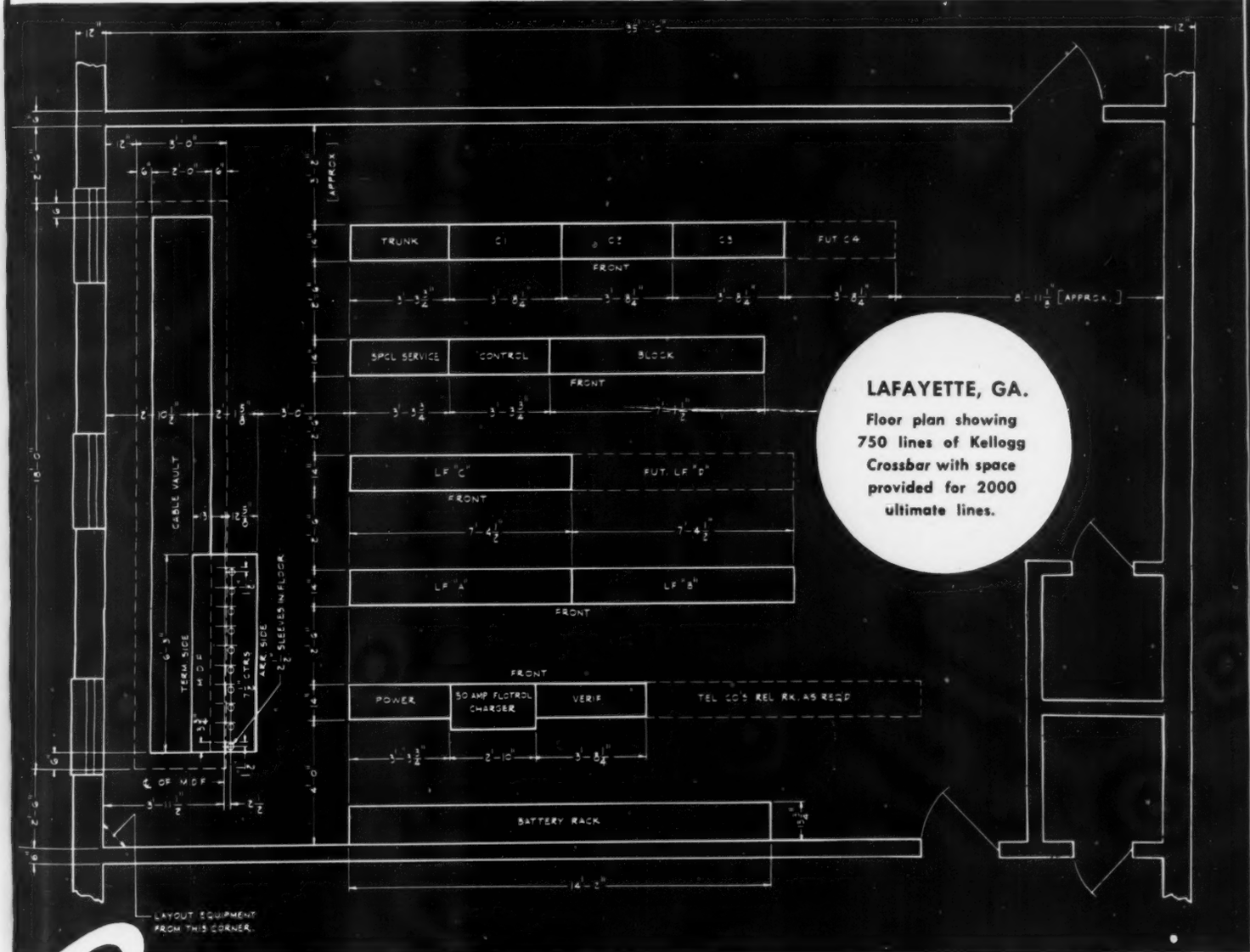
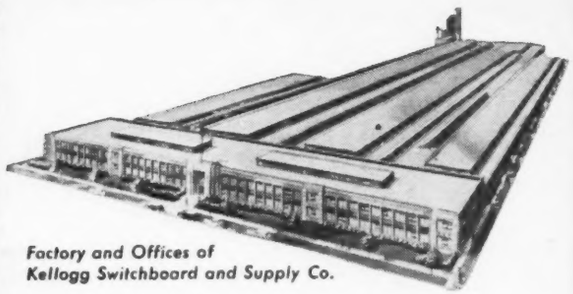


LAFAYETTE, GA.

Floor plan showing 750 lines of Kellogg *Crossbar* with space provided for 2000 ultimate lines.

Crossbar—*Superiority* PROVED BY USE



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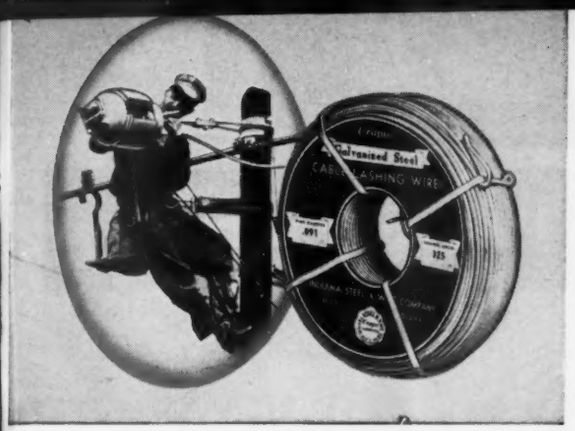
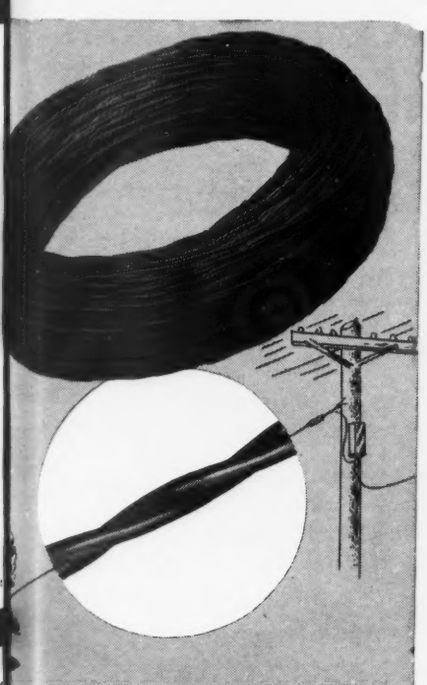


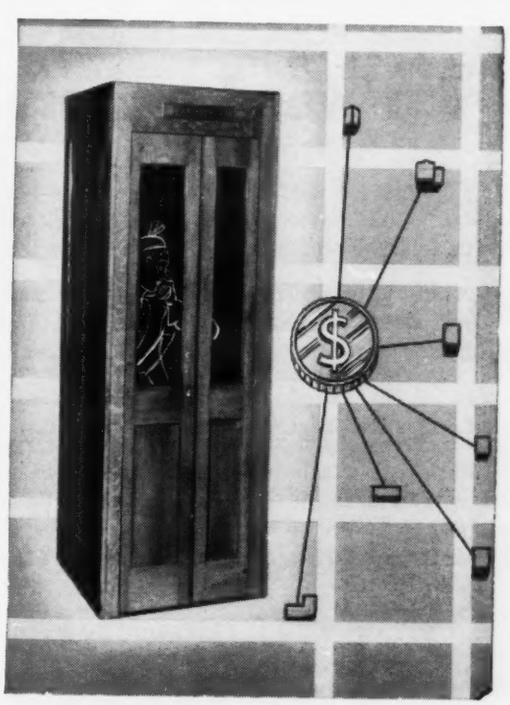
Prompt Delivery! Available now, for use with modern cable spinners, is Crapo Galvanized Steel Lashing Wire. Heavily-galvanized; 0.91″ diameter, 325-foot coils, "Stainless Steel" Lashing Wire (.045″ and 0.65″ dia.) also shipped promptly. Both are products of INDIANA STEEL AND WIRE CO.

"Attention the Universe; by Kingdoms, right wheel"! With these words, Samuel Morse clicked off the first telegram, Jan. 24, 1838. Since early days, Hemingray Insulators have served communications. Today, made by AMERICAN STRUCTURAL PRODUCTS, they're standard for quality.

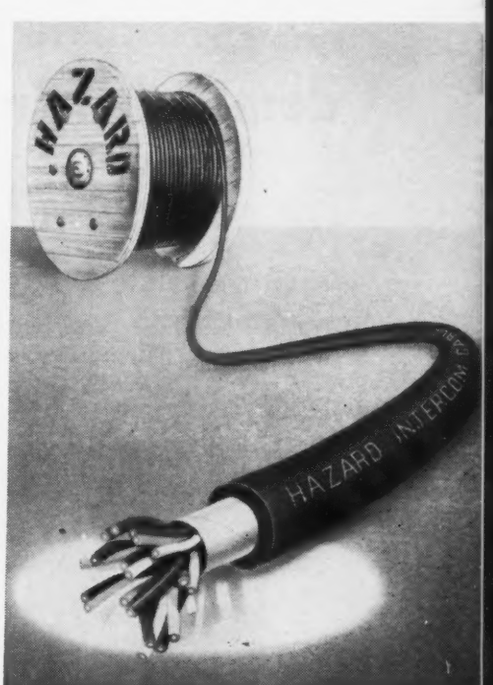
Poles That Last! The creosoted Southern Yellow Pine poles selected by the T. J. MOSS TIE COMPANY are exceptionally sturdy and durable—will give longer years of service. Poles are uniform in size and full-length pressure-treated to conform to rigid standards of quality. Poles are shipped as scheduled by the purchaser.



g Service Life and Low Plant Costs go hand-hand with the installation of ENDURPRERE The Neoprene Drop Wire available in both pperweld and Bronze. This flexible and easy handle wire is made by the GENERAL SULATED WIRE WORKS.



Make Every Pay Station a Paying Location! Churchill booths attract extra patronage everywhere. That's because they give the public privacy, roominess and comfort. Above is CHURCHILL CABINET CO.'s No. 100 booth, with door-controlled light switch and ventilator.



For Better Talking Characteristics—try Hazard Multi-Pair Intercom Cable. Low-capacity conductor insulation provides excellent speech transmission. Tough, outer sheath resists oil, flame and moisture. Made by the HAZARD DIVISION of THE OKONITE CO.

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demand it in your wood preservative, too

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And service records, after all, are the only conclusive method of judging a preservative. They take into account every factor that affects the life of wood—weather, sunlight, moisture, temperature, air and food conditions.

U·S·S Creosote Oil has undergone extensive service tests . . . has proved time and again that it has the characteristics necessary to give the maximum life to treated wood.

U·S·S Creosote Oil is available for immediate shipment to you by rail or river from the world's biggest tar distillation plant at Clairton, Pa. For complete information, contact our nearest sales office or write directly to United States Steel Company, 525 William Penn Place, Pittsburgh 30, Pa.

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U·S·S CREOSOTE OIL

UNITED STATES STEEL

NEWSLETTER
TELEPHONE ENGINEER

Fortnightly TELEPHONE ENGINEER ★ TELEPHONE ENGINEER AND *Management*

ON THE 1st OF EACH MONTH ON THE 15th OF EACH MONTH

NEWSLETTERS *on Alternate Weeks*

November 15, 1951

Dear Sir:

Oral argument on initial decision of FCC, looking toward denial of complaint of Hush-A-Phone Corp. against foreign attachment provisions of Bell System companies' tariffs, has been scheduled by FCC for Nov. 30. Hush-A-Phone Corp. Pres. Harry C. Tuttle has indicated he will appeal to courts an adverse FCC decision. In its decision, Commission held that Hush-A-Phone impairs telephone service. FCC took position that, if it were to depart from general principle of having telephone equipment supplied by telephone companies, it would require stronger showing than that made by Hush-A-Phone.

* * *

Report of NARUC -- FCC Joint Toll Rate Subcommittee on "Message Toll Telephone Rates and Disparities", is important reading. It is 400-printed page volume with 12 chapters, appendices & glossary. Chapters cover such subjects as General History & Economic Aspects of Telephone Industry, Some Legal Aspects of Toll Rate Disparity Problem, Toll Rates, Traffic Analysis & Usage, Divisions of Revenues & Settlements, Operating Results, Cost Analysis, Economies Resulting from Recent Developments, Toll Rate Design, & Conclusions. Price of volume is $6.50. Orders should be sent directly to: National Association of Railroad & Utilities Commissioners, P.O. Box 684, Washington 4, D. C.

* * *

Commerce Department issued 121 page survey or economic trends by regions in U.S. since 1929. Officials called it "most comprehensive survey" of its kind to be issued in recent years. Copies may be obtained for $1 from Commerce Department field offices, or from Superintendent of Documents, U. S. Government Printing Office, Washington, D. C.

* * *

Efforts of Bell System companies to make enough money to meeet increased costs of operations & taxes -- problem intensified by new upsurge of costs of wages, & other cost increases & new 52% corporation tax rate -- resulted last month in one of most active periods in rate case developments in recent months.

Highlights included following: (1) New York Tel. Co., citing that it needs more than $10 million per year "to meet the new taxes alone," & that it is currently negotiating with labor unions on basic wage rates, asked New York Public Service Commission Nov. 1 to "reconsider in full its case for additional revenues to meet higher costs." Less than month ago, commission rejected New York company's request for $57 million rate boost.

(2) Kentucky Public Service Commission was ordered to hear evidence on recently increased costs before making final its decision on Southern Bell Tel. & Tel. Co. rates in state. Company has had rates designed to produce additional $2,732,000 a year in effect under bond for some time, but in its decision in case now remanded, commission approved boost of $1,256,000 annually.

(3) In action which was immediately characterized by Southern Bell Georgia Manager Lane Hubbard as "an extreme disappointment," Georgia Public Service Commission Nov. 1 approved rate increases of $3,625,000 a year. Company had asked for more than double amount granted by regulatory body in 4-1 decision, with Commissioner Walter McDonald dissenting. Included in order was authorization for 10-cent pay station rates in Atlanta, Macon, Augusta, Columbus, & Savannah.

(4) Pointing to drastic rises in costs, Southern Bell asked Alabama Public Service Commission to fix new rates for telephone service. Present Alabama rates, it was pointed out, are based largely on costs which prevailed prior to Korean war & are inadequate under present-day conditions.

(5) New England Tel. & Tel. Co., which has just concluded new wage agreements with unions representing its employees, announced that it will be necessary to take immediate steps to obtain higher rates in Massachusetts, Rhode Island, & Vermont. Applications now pending before Maine & New Hampshire commissions take into account higher costs, including new retroactive 52% corporation income tax rate, the New England company said.

* * *

Chairman Matt McWhorter of National Association of Railroad & Utilities Commissioners' (NARUC) Special Telephone Committee has been advised of new separations allocations, compiled by states, to be made effective under new interim separations agreement between FCC & NARUC. Compilation presented to FCC staff officials by American Tel. & Tel. Co. representatives was also reviewed & termed satisfactory by Virginia Corporation Commission Chief Accn't James H. Brown, who heads NARUC Staff Subcommittee on Separations.

* * *

HIGHLIGHTS:—Columbia & Rensselaer Tel. Corp., Chatham, N. Y. announced $250,000 automatic conversion project . . . Derby (Kans.) Tel. Co., Inc. granted charter. Payne H. Ratner is resident agent . . . United Tel. Co. completing $14,000 swbd. addition at Franklin, Ind. . . . Sand Hills Tel. Co-op, Lancaster, S. C., plans application for charter. D. E. Baxley, Kershaw, is chairman . . . Farmers Mutual Tel. Co., Illinois City, Ia., named Wendell Ranke, sec. He succeeds Clarence Thomas who died Oct. 1.

Ray W. Smith, Editor

100,000,000 yanks

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performance

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It's a simple thing; but typical of the many exacting tests which stand guard over North Performance for Profit in the field. When YOU need performance, buy NORTH.

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THE NORTH ELECTRIC MANUFACTURING COMPANY

Originators of **ALL RELAY** *Systems of Automatic Switching*

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WASHINGTON

Washington Bureau Reports

NPA Communications Equipment Division requests supplemental copper allocation . . . Industry spokesmen tell NPA of rapidly growing service demands and overcrowded toll lines.

By Roland Davies and Fred Henck

FACED WITH tremendous demands for service, in a situation seriously complicated by the decentralization program and the establishment of huge installations in formerly thinly-populated areas, the communications industry will be unable to carry out the programs expected of it unless more copper is available.

The problems faced by the communications companies were laid before the mobilization authorities directly concerned with the industry—the National Production Authority's Communications Equipment Division—in meetings of the operating and manufacturing industry advisory committees to NPA.

An appeal by the Communications Equipment Division for a supplemental allocation of copper is now pending before the Defense production Administration. For the first quarter of next year, the communications industry has been allotted 47,230,000 pounds of copper, an amount 5,310,000 pounds less than that scheduled for the current fourth quarter of 1951.

Operating companies, under the allotment in effect at TELEPHONE ENGINEER & MANAGEMENT press time, will receive allotments of 32,632,000 pounds of copper materials during the first quarter of next year, or 73% of their requirements, compared with 37,055,000 pounds allotted for the current quarter. Altogether, the operating companies had requested 53 million pounds of copper, in the form of wire, cable, and other materials, for the first quarter of next year. This total was adjusted to a requirement of 44,906,000 pounds under the controlled materials plan.

Adjusted requirements and first quarter 1952 allotments to the operating industry, with fourth quarter totals, are as follows: *steel*—total

requirements, 28,914 tons, first quarter allotment, 22,349 tons, percentage of requirements, 77%, and fourth quarter allotment, 20,352 tons; *copper*—total requirements, 44,906,000 pounds, first quarter allotment, 32,632,000 pounds, percentage of requirements, 73%, and fourth quarter allotment, 37,055 pounds; and *aluminum*—total requirements, 11,000 pounds, first quarter allotment, 2,000 pounds, percentage of requirements, 18%, and fourth quarter allotment, none.

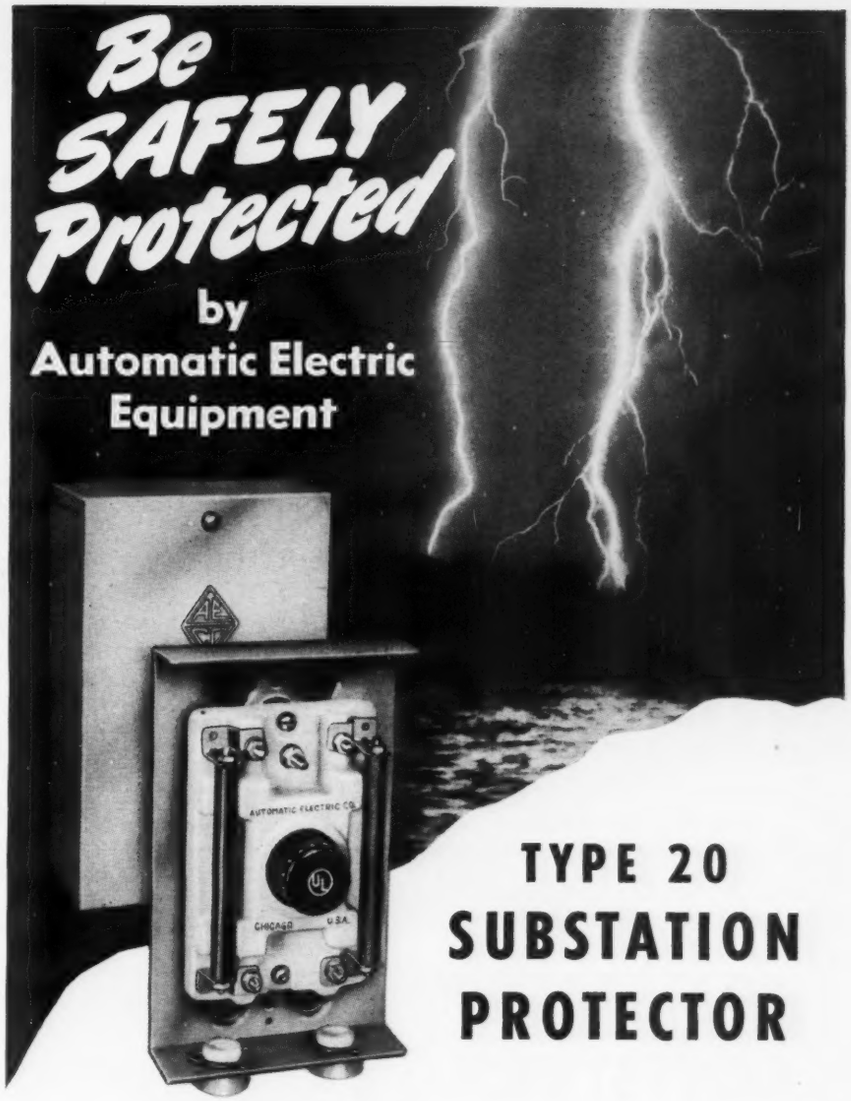
In stressing the present-day problems of the industry, the operating companies' spokesmen drew a picture of an industry which was unable to meet all demands during World War II, and then had a period of only about three years of relatively normal activity before returning to a virtual war footing. Representatives of Bell System and Independent telephone companies told of rapidly growing demands for new service, overcrowded toll lines, and pressure from regulatory agencies for improved or expanded service.

As indications of the need for more materials, particularly copper, to carry outneeded programs of expanding toll facilities, maintenance and expansion of buildings housing equipment, installation of new central office equipment, and extension of service to defense installations, new factories, homes, and commercial establishments, the industry spokesmen on the committee presented detailed statistics to the NPA officials.

The tabulations covered held orders, inability to fill upgrading requests, need for additional long-distance circuits to meet demands, and the ever-increasing problem of supplying communications facilities at a time when defense activities are increasing the demand. This is particularly true, it was said, in the establishment of some huge industrial plants in formerly sparsely-populated areas, because of the decentralization program.

On the subject of held orders, the NPA was told that one Independent, for example, has unfilled orders which are equal to 20% of its present station development, despite a 25% boost in the number of telephones served in 1949 and a rise of similar magnitude in 1950. At the same time, it was reported, the Bell System's unfilled orders increased by 25,000 in the first 10 months of 1951, and it was predicted that the total will mount to one million in the near future. The Bell System also has 1.8 million held orders for upgrading, it was pointed out.

At the communications manufac-



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A compact device you'll find most economical! Dust-tight cap covers discharge blocks to insure dependable operation. Order Cat. No. SA-57.

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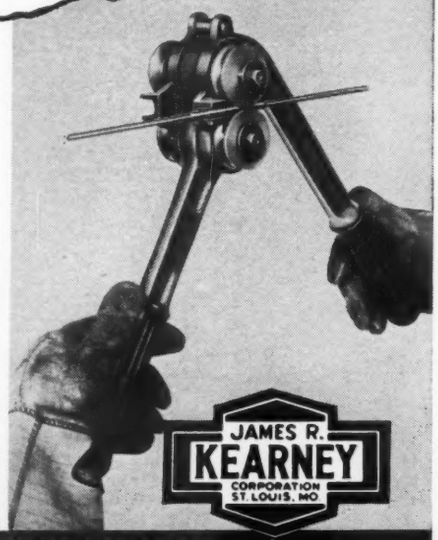

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PERSONALIZED SERVICE

turing industry advisory committee meeting the preceding week, CED Director Robert E. Williams said that "we don't feel the manufacturing companies will be too badly hit in the first quarter of 1952."

Mr. Williams commented that the companies "may not get all of the controlled materials we allot to them, but there seems to be a feeling that the first quarter of 1952 will not be as bad as the fourth quarter of 1951." It is expected that the "coupons" given the manufacturers for materials allotments " will be redeemable in better percentage than has been the case in the current quarter."

The tremendous effects of the military procurement program on the availability of supplies and manufacturing capacity of the communications-electronics industry was emphasized at the meeting by James H. Bower, Chief of the Communications Facilities Branch of the Munitions Board.

Mr. Bower pointed out that $4 billion of the defense budget has been labeled for electronics and communications equipment, that 40% of the copper allocated to the communications industry has been set aside for military requirements, and that the military construction bill recently passed by Congress will call for additional communications equipment and facilities.

In discussing the outlook regarding availability of materials, NPA officials at the meeting elaborated on military requirements by pointing out that about 40% of the aluminum for communications during the first quarter of next year also will go to the military, as well as comparatively large quantities of non-controlled materials, such as nickel and cobalt.

Mr. Williams pointed out that, as far as the controlled materials plan is concerned, "some of the aches and pains have been eliminated" and a gradual improvement in production capacity is expected. Availability of copper, aluminum, and steel should be a little better by the middle or end of 1952, he said, and continued recognition by top-level defense mobilization officials of the essentiality of the communications industry is hoped for.

The nickel situation is probably the most serious supply problem confronting the communications and electronics industries.

An indication of mobilization problems, both in the tight nickel situation and overall difficulties which have to be faced, came a few weeks ago as a result of the New York dock strike.

(*Please turn to page* 20)

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(Continued from page 16)

About 69 tons of the critically short metal were lost to manufacturers when a Norwegian ship pulled out of New York Harbor without unloading its cargo. A substantial amount of the nickel had been consigned to one communications manufacturer, and NPA and DPA officials made a strong effort to have the nickel taken off the ship. It was understood that the dock strikers agreed that the nickel could be removed, but then refused to unload it when it was discovered that the nickel had been loaded under perishable foodstuffs, which also would have had to be taken off the ship.

Although the copper appeal was still pending as this column was written, appeals by the NPA communications division for greater amounts of steel and aluminum in the first quarter of next year have been acted on favorably by the DPA Program Requirements Committee.

Originally, the industry was allocated 2,500,000 pounds of aluminum, for the operating companies and for class B (general use) products turned out by manufacturers. As a result of the appeal, a total of 2,900,000 pounds was approved.

Regarding steel, the total allocation was 40,400 tons, compared with 39,550 allocated previously. Another improvement, however, was in obtaining the types of steel most critically needed by the industry. Originally, 38,000 tons of carbon steel, 1150 tons of alloy, and 450 tons of stainless steel were allocated. To obtain additional amounts totaling 38,700 tons of carbon steel and 1350 tons of alloy, the industry forfeited 100 tons of stainless steel.

The kind of job faced by the nation's communications industry was never more clearly shown than in the blanket construction application filed early this month by the American Telephone & Telegraph Co. and 11 Bell System associated companies. Filing of blanket applications for projects involving the A. T. & T. Long Lines Department for each year ahead was started several years ago, to speed up and simplify Federal Communications Commission approval of the projects.

In considering the huge totals of this year's blanket application, it must be remembered that the individual Bell System companies file applications separately for their own projects. In addition, the blanket application is customarily supplemented by other requests submitted as the need arises.

But even though the blanket appli-

cation shows only a portion of the job ahead, it still calls for the addition of *seven million* channel miles of telephone facilities, as well as 2645 additional telegraph channels for use in private line telegraph and teletypewriter exchange service.

Estimated cost of the projects for which authority was requested totals $59,175,000. As a comparison, the sizeable blanket application of a year ago was for $15,563,000 estimated cost, to add a total of 1.5 million channel miles of telephone facilities and 1900 telegraph channels.

OBITUARY: Harry B. MacMeal

HARRY B. MACMEAL, 82, sales manager of Runzel Cord & Wire Co., Chicago, died in St. Luke's Hospital, Chicago, on Oct. 26 from complications resulting from a fall during the recent convention of the United States Independent Telephone Association.

In the 1890's, Mr. MacMeal was active in the development of the Independent telephone industry. In 1901, he aided H. B. Chambers in founding "Telephony" and was editor and advertising manager of that publication for many years.

From 1918 to 1921 Mr. MacMeal owned and published Telephone Engineer & Management. In 1934 he authored "The Story of Independent Telephony," a history of the birth of the Independent telephone movement and its subsequent growth.

He became telephone sales manager for the Runzel company in 1931 and remained with the company until his death. In recent years, he lived in Grand Rapids, Mich., and commuted to work in Chicago. On Oct. 11 Mr. MacMeal moved back to Chicago.

He is survived by his widow, Olive, and his brother, Felix, of Grand Rapids.

RURAL: Hill Reports on REA

ACTUAL ADVANCES totaling more than $1 million have been made by the Rural Electrification Administration to 17 farm telephone borrowers, Senator Lister D. Hill (D., Ala.), long-time advocate of a federal rural telephone program, reported in a statement on the program included in the last issue of the Congressional Record before Congress adjourned.

By mid-October, Senator Hill said, REA had made telephone loan allocations totaling about $48.8 million to more than 133 borrowers. He re-

(*Please turn to page* 24)

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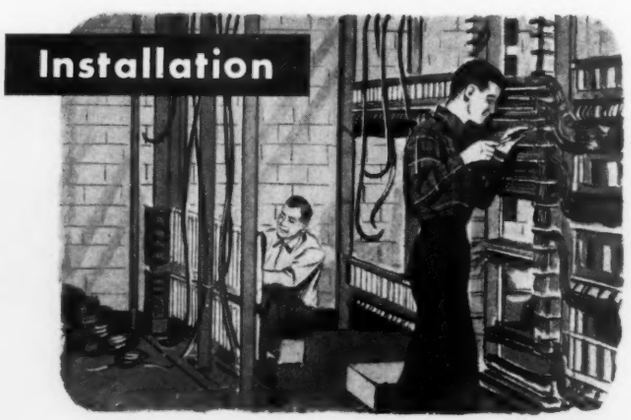

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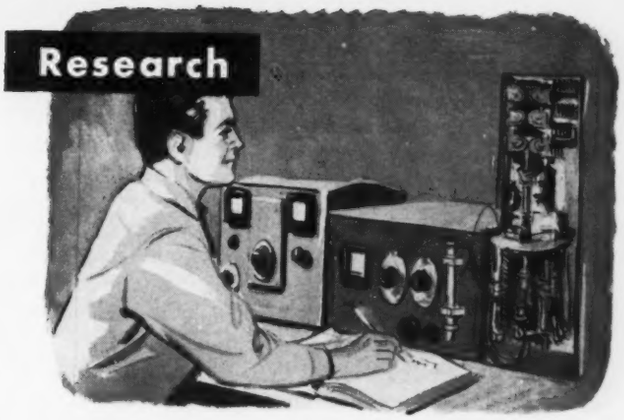

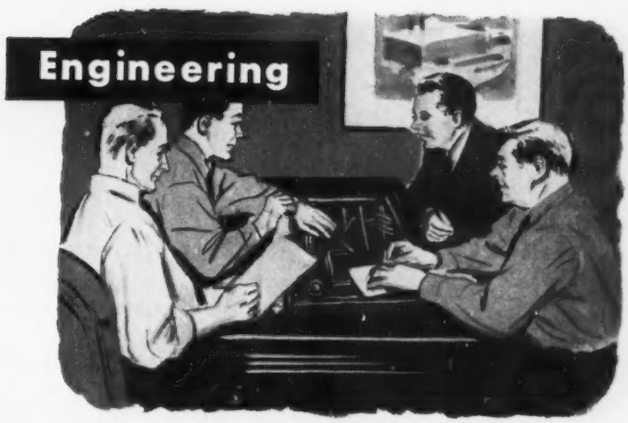

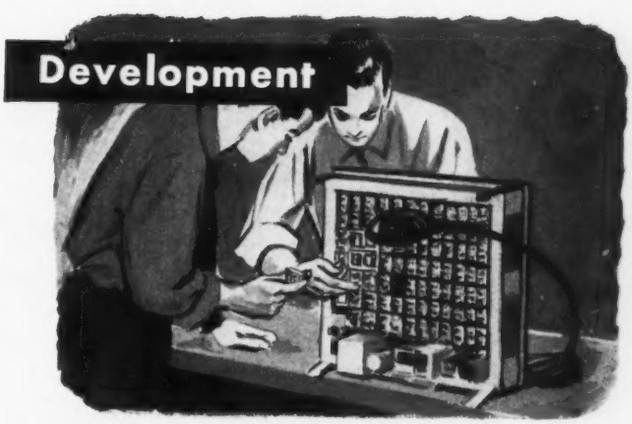

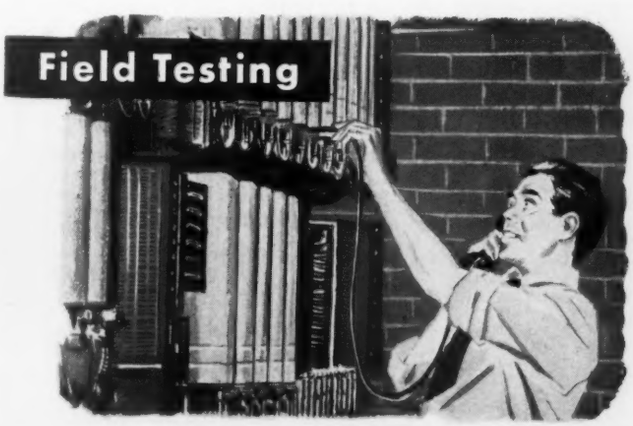

(Continued from page 21)

ported that by the first week of September, 84 borrowers had selected engineers; 40 had submitted area coverage plans for approval, with more than half already endorsed; and 17 were "all ready to go" with their central office equipment.

Previously unreported is fairly substantial progress by REA farm telephone borrowers toward getting facilities into actual operation. Three construction contracts have been approved, with construction under way on one, while a number of companies have done considerable force account (with their own employees, as opposed to contract) construction, or are about ready to get under way.

The contract project well under construction is that of the Eastern Rowan Telephone Co. of Granite Quarry, N. C., which received a $343,000 allocation, while the two projects under contract, on which work is to begin soon, are the Winnebago Cooperative Telephone Association of Thompson, Ia., with a $552,000 allocation, and the Farmers Mutual Telephone Co. of Shellsburg, Ia., with a $99,000 grant. Among the companies doing substantial force account construction are the Fredericksburg & Wilderness Telephone Co. of Chancellor, Va., the first borrower to cut REA-financed facilities into service, which has just about completed initial construction on its $55,000 allocation and may seek a second loan to meet unforeseen service demands; the Navasota (Tex.) Telephone Co., which borrowed $25,000 and has had REA-financed facilities in service since late last year; and the New Lisbon, (Ind.) Telephone Co., which received a $45,000 allocation.

Borrowers which have force account construction under way or about to start include: Santa Fe Telephone Co., Melrose, Fla., with a $474,000 allocation, which has started construction; Mutual Telephone Co. of Sioux Center, Ia., allocated $150,000 which has completed its building and has some poles in the ground; Pine Island (Minn.) Telephone Co., allotted $103,000 which has most or all of its poles set; and Wilkes Telephone & Electric Co., of Washington, Ga., with an allocation of $184,000, which rejected contract bids and is due to start construction with its own employee force soon.

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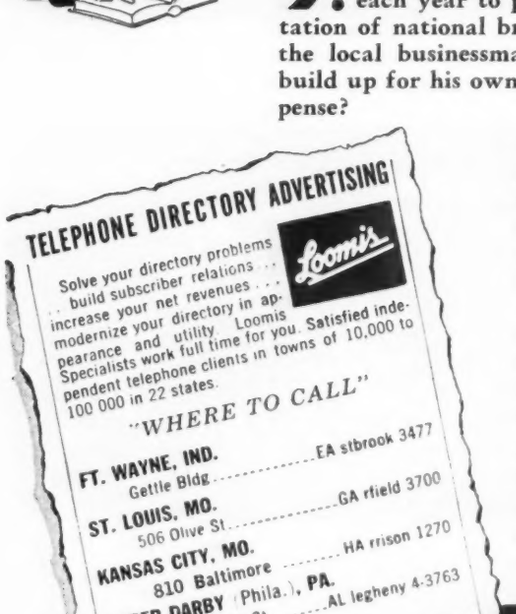
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Florida Telephone Association, Sheraton Plaza Hotel, Daytona Beach, Fla., Nov. 15-16.

Minnesota Telephone Association, Saint Paul Hotel, St. Paul, Feb. 5-7, 1952.

Kentucky Independent Telephone Association, Phoenix Hotel, Lexington, Mar. 4, 1952.

Texas Telephone Association, Gunter Hotel, San Antonio, Mar. 10, 11, 12, 1952.

Nebraska Telephone Association, Paxton Hotel, Omaha, Mar. 25-26, 1952.

Iowa Independent Telephone Association, Hotel Fort Des Moines, Apr. 7-8, 1952.

United States Independent Telephone Association, Executives' Conference, Broadmoor Hotel, Colorado Springs, Colo., May 8-9, 1952.

New York State Telephone Association, Mark Twain Hotel, Elmira, May 21-22, 1952.

Indiana Telephone Association, Claypool Hotel, Indianapolis, June 4-5, 1952.

EDITORIAL

"Time Is Of The Essence"

THERE IS serious need for speeding up telephone rate cases in some regulatory commission jurisdictions—particularly large cases involving, as practically all of them do, the ability of the company to do the financing necessary to allow it to serve many people who are waiting for telephones.

There is also need in many jurisdictions for further simplification of small company rate cases, which would automatically speed them up.

Rate case procedures adopted by a commission years ago, when the level of expenses and also the purchasing power of the dollar were both relatively steady, simply do not meet the urgent necessities of telephone companies in these days when expenses mount rapidly and the buying power of the dollar can go down overnight.

Under the present-day procedures and practices of some commissions, it is not unusual for a large rate case to remain on a commission's docket for a year and frequently longer. Often a company's expenses and taxes increase so much and so rapidly while the case is still on the docket, that it is compelled to amend its petition and ask for still higher rates even before the commission has passed on its first application.

Frequently, too, a rate case drags on so long that a considerable portion of the exhibits prepared by the company to support its application become so out-of-date—especially those relating to expenses and revenues —that a new set of exhibits must be prepared. This requires time which still further prolongs the settlement of the case.

It is fortunate for the telephone industry as a whole that a number of commissions are alert to the detrimental effect of the present inflationary situation upon the utilities under their jurisdiction, and also upon the customers of those utilities, unless prompt rate relief is given to companies needing it.

These commissions, with due regard to the rights of and benefits to the public served, act vigorously and promptly—and also non-politically.

In so acting they are, we think, serving properly and diligently the purpose for which they were created.

The attitude of that type of commission, and the telephone rate situation in general, was stated succinctly and forcefully in a recent decision by the California Public Utilities Commission granting higher rates to Associated Telephone Co., Ltd.

The Commission said that this company "is the victim of inflation, as is the public and business generally", and that its "prices must be kept current if it is to furnish the type of service the public is demanding."

The truth of this is apparent. There can be no dispute over the basic facts that, if a telephone company is to properly serve its public, it must have sufficient revenue to pay its expenses, depreciation and taxes, and to have enough left over to meet its interest, pay dividends sufficient to attract new capital, and retain a reasonable amount of surplus.

The word "current", as used by the California Commission, is important. A telephone company cannot obtain higher rates before it needs them. When it applies for them, it needs them then.

The longer it is delayed thereafter in obtaining them, the worse its situation becomes—and the greater its inability to serve its public.

"Time is of the essence"—which means, in this case, that it is not only the higher revenue that is important. It is also important that it be made available as soon as possible.

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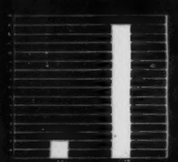
3 What Will Maintenance Cost?

Did you know that a system employing single contacts has a ratio failure of 1 in 10,000; whereas, in a system with *twin* contacts, the ratio drops 'way down to 1 in 100,000?



4 Can Toll Traffic Be Adequately Handled?

Toll traffic is ever-increasing, which means that the dial switching equipment should provide 100% toll access to all connecting paths.

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Your dial switching equipment should provide adequate means for handling this ever-present problem. Will the system of your choice provide the best method?

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Building and Maintaining Good Will

By John G. Schultheis

The Home Tel. & Tel. Co., Fort Wayne, Ind. (A Gary Group Co.)

GOODWILL! There is probably a word for it in every language. In Spanish it is, "Buena Voluntad"; in Polish, "Dobra Wola"; in French, "Bonne Volonte".

Whatever the language, goodwill is a great intangible asset. Its value cannot be measured in dollars and cents, yet to build and maintain it is most essential, especially in the telephone industry which depends for its existence upon the selling of that other intangible—service.

Goodwill is not a mere platitude, nor is it only an exemplification of some established rule or practice when relations between public utilities and their customers are to be considered, particularly in the telephone industry. It is rather the result of lending counsel, counteracting opposition, informing, enlightening, correcting misapprehensions, easing tension, and lessening friction—all with tact and understanding.

Naturally, therefore, goodwill is never a barrier but rather an "open sesame" to understanding and cooperation. The more goodwill that prevails, the easier it is to disarm entrenched prejudice so often apparent in the public's attitude toward utilities. It is highly important to know "How to Win Friends and Influence People", but Dale Carnegie's words of wisdom are often lost to us while we are in the throes of our routine duties.

What can we in the telephone industry do to build goodwill and thus enhance our public relations? Certainly much can be accomplished by educating our subscribers, informing them of the facts, recognizing their grounds for grievance, and correcting their mistaken concepts.

Three Groups of Customers

THE CUSTOMERS of telephone companies are made up of three characteristic groups. The first and largest group comprises those subscribers who accept the ordinary processes of business in a routine manner. Thus, all bills are paid with regularity—without any unnecessary questioning. Members of this group recognize their financial obligations. The second group, which makes up only a small percentage of the whole, comprises the timid who have a secret dread of committing a felony if their bills are not paid immediately. The members of this group are the kind who fear they might choose a wrong window when paying their bills or perhaps enter a wrong door to an office and thus incur someone's disfavor.

Neither of the foregoing two groups requires that the telephone company make an all-out effort to acquire their goodwill. Members of these groups may not all publicly laud the telephone company or even defend it in an argument, but they rarely "carry a chip" and are generally willing to let well enough alone. The third group, on the other hand, comprises, to a large degree, obstreperous-natured, hard-to-please subscribers. This type is the source of our greatest need for building goodwill. We can mollify the resentment of this group by persistently displaying an eager willingness to extend ourselves, and by demonstrating the value and importance of telephone service. We can familiarize them with, and convince them of, the constant and careful and diligent effort necessary to maintain adequate service. We can likewise enlighten them as to the human and mechanical elements that tend to hamper us in our striving for the best service obtainable.

John G. Schultheis, Commercial Representative, The Home Telephone & Telegraph Co., Fort Wayne, Ind.

To dismiss subscribers in this third group as chronic complainants does not solve the problem for the subscriber nor does it rid the company of his harmful influence. Instead of ignoring his complaints we must apply all the energy at our command to win him over by frank and open discussion. By manifesting a willingness to enlighten and satisfy him, we will, in time, bring him around to a more reasonable point of view. All of which, in turn, will result in mutual respect and understanding. No man can long withstand a friendly gesture inspired by fairness and sincerity and a wish to be helpful.

"Establish Harmony and Understanding"

INTENTIONS and policies alone, advocating goodwill, however, do not create it. Rules, pamphlets, and suggestions pertaining to goodwill are effective only when put into practice; that is, when the real essence of goodwill is carried out to the fullest. This means that we must attempt to establish harmony and understanding which will lead to complete cooperation between the company and the public it serves.

A familiar aphorism in retail trade is "the customer is always right". When this principle is carefully followed it serves to give the buyer an air of confidence in and an agreeable intimacy with the merchant, which encourages a freer approach, resulting not only in increased goodwill, but also in increased sales as a result of this goodwill. Similarly, in the telephone industry, the application of this principle will tend to bring about understanding and cooperation on the part of the telephone subscriber in his contacts with the company. Whether these contacts are in the nature of service difficulties, billing situations, or of a more general character, they all offer the opportunity to build goodwill. If the subscriber can be led to feel the sincerity of the company's willingness to please,

much will be accomplished in the improvement of public relations.

Just as retail values become apparent to the buyer through contact with and knowledge of the merchandise he buys, so the intangible, yet multiple, factors of the subscriber's telephone service should be made apparent to him to emphasize the extent of the return on his telephone dollar spent with the company. To do this we should enlighten the subscriber and impress him with the intricacies of our improved mechanical and technical equipment which must be manned by experts. We should stress the importance and value of uninterrupted service and show how we must employ many complex and intricate plant facilities including miles and miles of wire in order to provide such service. We should point to the crews of workers who are ever alert to the possibilities of interruptions caused by storms and other disturbances. We should call attention to the effort required and costs incurred by the telephone company in order to provide added facilities to meet the ever increasing demand for service. We should explain the reasons for the shortage of equipment and materials which has existed over a period of years due to conditions beyond our control. We should point out the obstacles ahead which may prolong these difficulties. All these are factors of potent value in the building of goodwill. With repeated presentation of these facts, an uninformed and uncooperative subscriber can be converted from an aggressive opponent to a friend and booster.

Proper "Telephone Conduct"

IF IN ALL personal contacts in the telephone industry, the maintenance of goodwill is kept uppermost in mind, an amicable subscriber-company relationship is bound to develop. This means, in no small measure, that we must require the establishment of a realm of proper "telephone conduct" between employee and subscriber in which tact and diplomacy are first essentials. It is easy to disregard the customer's seemingly petty grievances, and yet, here is an excellent opportunity to win his confidence if the subscriber be convinced of our eagerness to correct the trouble. Haste in dismissing the subscriber or any tendency to show resentment through personal impatience or rancor is a tragic error. It is under such condition that "a civil answer turneth away wrath". Never should a shred of contention be evident on our part, but rather, in the end, let the subscriber thank us for our interest and cooperation.

WHEN THE people—at least, when a majority of the people—of this country decide they wish to make a change in the policies which are daily causing bad matters to become worse, those policies will be changed. But the people themselves must bring the change. So long as our people regard the government as a benevolent and doting parent, rather than a personal responsibility, just so long will we continue to head toward a completely socialistic state.—*Foley, Ala. Onlooker*

Under no circumstances should he be given the least provocation to "hang up" on us and so perhaps bear a grudge. This is a highly important factor in our program to build goodwill.

Let us bear in mind that much of the day's business is handled by telephone between the company and its subscribers. Too much emphasis cannot be placed upon our telephone manner since goodwill is more difficult to achieve over the telephone than in face-to-face contact, which affords less occasion for misunderstanding. Therefore, much effort must be expended to achieve goodwill via our telephone conversations. A gracious conclusion of a business transaction gives the customer the urge to praise the company and the industry; this should be the aim and desire of each representative in any branch of the telephone service. Remember, courtesy begets confidence and confidence begets goodwill.

Where the management of a company reaches out to include outlying unattended exchange units in its program to build goodwill, these communities become an important factor in achieving the desired goal. At the outset, the fact that the location of the company headquarters is situated in a metropolitan area several miles distant is apt to impress the subscribers of the suburban communities with a vague sense that they are being harbored as a "stepchild". The intentions, policies and efforts involved in the company's program to provide good telephone service in these communities are apt to be unknown. Situations or conditions may be misunderstood or misinterpreted, and thus bring about dissatisfaction. Such a condition can be offset by a systematic, diligent effort to supply information and to create a friendly atmosphere between the company and the local communities.

Leaders in these exchange areas are usually alert and intelligent men of business and culture, who greatly influence the thinking of the population. They are highly regarded by the community and their judgment is willingly accepted. Close association with these leaders is a practical means by which the company can build goodwill and understanding in the community. A full, clear knowledge of the telephone company's aims and objectives as well as its problems, constantly kept before these men, will make for cooperation and friendliness—all of which is sooner or later reflected in the entire community.

Our aim should be to impress these leaders in outlying exchange areas with the fact that the company's wish is to serve their communities. Then with our knowledge of their demands and their knowledge of our efforts, the basis of goodwill has been established. When community leaders become impressed with the deep concern of the company toward each exchange, all the subscribers should respond accordingly if contact with the leadership is steadily and diligently pursued. All the plans and proposals for building goodwill applicable to the headquarters exchange are of the same high value when put into effect throughout the outlying exchanges.

With the immeasurable contributions which the telephone industry makes toward the well being and progress of man, it is, beyond doubt, a most powerful force for human welfare. Its service conforms to the business, social and emergency needs of all communities, from the tiniest cottage to the greatest of industries. Regardless of time or season, it is not only ready to serve a community or neighborhood, but, if need be, its use may be extended to the far corners of the world. Such scope of service on call for man's needs and convenience is certainly deserving of the highest regard and consideration of all. In this light, if in no other, it merits man's goodwill and confidence. Thus, it is seen that goodwill is not a mere empty phrase, but is instead an important and practical asset in the telephone business.

Even the United States Supreme Court has recognized the importance of goodwill when it spoke advisedly as follows:

"Goodwill is the disposition of a customer to return to the place of business where he has been well treated."

Just Plain Telephone Folks

". . . the fact still remains—telephone folks are among the best in the world. . . ."

By Josephine Poppleton

Peninsular Tel. Co., Tampa, Fla.

WHAT IS THIS huge cauldron, apparently overflowing with some sort of "telephone nectar" that has such strange effect on all those who happen to take a sip? Many are fortunate to imbibe at an early age and many at some later time in life—but in either case they succumb to its influence. The old adage —once in the telephone business, always in the telephone business, proves true in most instances. Some leave for a while and then return; the fascination is too great. This is true in every branch of the industry, operating, plant, traffic, commercial, or just plain roustabout.

Many great changes in equipment have taken place since those now famous words "Mr. Watson come here, I want you" were spoken and actually heard over the first apparatus designed by Mr. Bell, but the peculiar and valuable traits instilled in the type of person who follows the telephone industry have not changed. In the early days perhaps there were many hardships and handicaps which have long since been eliminated in giving "service" but yet today there are emergencies that call for the same loyalty and will to carry on that have never changed. War, hurricanes, floods, storm and sleet, or just an emergency or death call through an operator brings out this instinctive human quality.

There are 700,000, more or less, telephone workers in the United States. Bell or Independent has no bearing on the characteristics of a telephone worker. The slogan is the same: "give service". There is the same opportunity in the telephone field for achievement and advancement as in any other business. This has proved true in many instances, as you well know. From messenger boy or elevator operator right on up to presidency or from operator right on up to the highest positions of responsibility. This you read in the press many times and just recently there have been several specific cases of this nature.

Our Industry is very fortunate in having organizations to help carry on and fight many of the major battles for the various companies—both large and small. The National Association is invaluable, especially in recent years when it has become the habit, so to speak, for our local and national governmental agencies to look continuously around for some likely spot to tack on another tax of some kind, or some ruling to hinder proper and just operation of a company. It is a continuous job to try to combat these encroachments in the fight for its well being.

We are most fortunate in having qualified leaders in our National Association to look after our welfare and keep us advised. This is done through the various state associations who have the same job in their own particular territory. A fine spirit of cooperation is carried out in this instance as many Independent associations include the Bell in their membership. It would be amiss to neglect to mention also the Pioneer associations, both Independent and Bell, made up of thousands of telephone employees with many, many years of employment. These associations too, operate from a national headquarter with capable personnel, through state and local chapters.

Josephine Poppleton, Peninsular Telephone Co., Tampa, Fla.

Through the facilities which they operate, every community, large or small, in every section of the country finds it possible to be in quick communication with any other community regardless of distance, without delay. As a matter of fact communication is quickly established through telephone facilities to almost all points of the world. Perhaps more than any other group, telephone employees feel that they are a part of a world-wide family. They are a highly important part of local community life whether at the country crossroad or in a large city. They are average folks recognizing the importance of service in the community in which they live and in the rendition of service they reach almost every home and business establishment in a community where they reside. It is this acquaintanceship with community life with a vision that is world-wide in its service of scope that makes a telephone man or woman an unusual and important character in the make-up of our population.

I think the following excerpt from a letter received a few weeks ago from the manager of a hotel where our own particular state association has held its annual meeting for the third consecutive time expresses the view of the outside public toward the telephone worker and the industry: *"In looking over the list of reservations I am happy to see that all of those people whom we have learned to know and like so well are returning again this year. They are like very old and very good friends to us. Not only I but my staff as well are looking forward to having you all with us again".*

Irrespective of what prompts this characteristic of a telephone employee —thrill or duty—for truly the telephone industry is "thrilling", the fact still remains, telephone folk are among the best, if not the best folk in the world!—THE END.

Joslyn Guy Clamps

Lubex Treated
Hot Dip Galvanized

No. J1061 1-Bolt Clamps

½-Inch Bolt

Now furnished with special square head bolt which also has square under the head. This square under head prevents bolt from turning while being tightened.

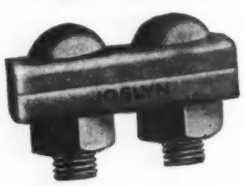
For use on 3/16, ¼ and 5/16-inch strands.

Length, 1 5/8 inches.

Weight per 100, 58 pounds.

No. J1030 2-Bolt Clamps

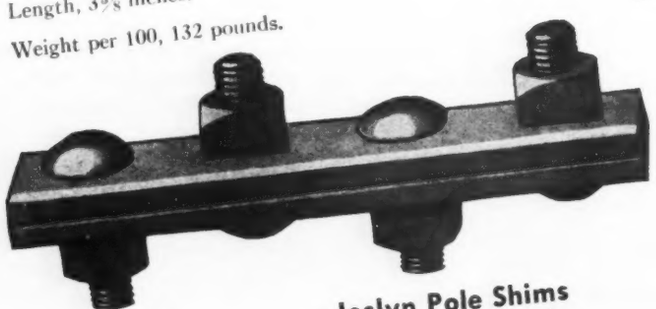
½-Inch Bolt



For use on 3/16, ¼ and 5/16-inch strands.

Length, 3 3/8 inches.

Weight per 100, 132 pounds.



3-Bolt Clamps
Center Bolt Reversible
No. J929 3-Bolt 4-Inch Clamps

For use on 3/16 to 3/8-inch strands.
Weight per 100, 176 pounds.

No. J930 3-Bolt 4-Inch Clamps

½-Inch Bolt

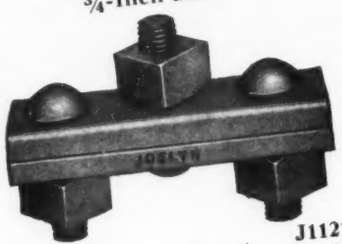
For use on ¼ to 7/16-inch strand.
Weight per 100, 232 pounds.

No. J931 3-Bolt 6-Inch Clamps

5/8-Inch Bolt

For use on 5/16 to ½-inch strand.
Net weight per 100, 280 pounds.

Heavy Duty 3-Bolt 6-Inch Clamps
Center Bolt Reversible
¾-Inch Bolts

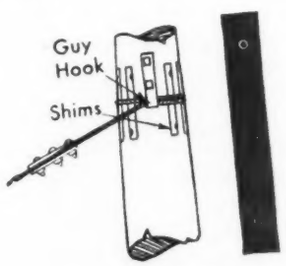


No.	J1121	J1131
For Use on Strand Size ..... inches	7/16, ½	9/16, 5/8
Net Weight per 100 ..... pounds	480	488

No. J933 4-Bolt 8-Inch Heavy Clamps

For use on 3/16 to ½-inch strand.

Net weight per 100, 382 pounds.



Joslyn Pole Shims

Hot Dip Galvanized

Six or more guy shims are required per pole, depending on its diameter. Nail holes are ¼-inch diameter. **Order** nails separately.

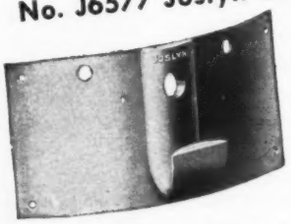
No.	J1035	J1036
Size ..... inches	1 17/32 x 7/32 x 8	1 1/4 x 1/4 x 8
Weight per 100 ..... pounds	55	70

*No. J1034 Joslyn Standard Strain Plates

Hot Dip Galvanized

Used for same purpose as guy shims but gives better protection. From two to four plates are required per pole, depending on its diameter. Size: 4x8 in. by No. 14 gage. Weight per 100, 85 pounds.
*E.E.I. Standard.

No. J6577 Joslyn Guy Hook Strain Plates



Has double function of preventing guy strand from slipping down pole and biting into pole. Guy hook is welded to the plate.

Size: 4x8 inches by No. 14 gage. Weight per 100, 147 lbs.

PAGE 19 FROM THE LEICH CATALOG

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it's easy to order from Leich too...

EVERYTHING your company needs is available from Leich. Poles, hardware, wire, tools, pins, crossarms, batteries, cable supplies, etc., are all listed in the big Leich catalog.

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You'll find it's easy and pleasant to send your supply orders to Leich. Good service, fair prices and highest quality, fully guaranteed telephone supplies help you accomplish your job faster, better, at the lowest cost.

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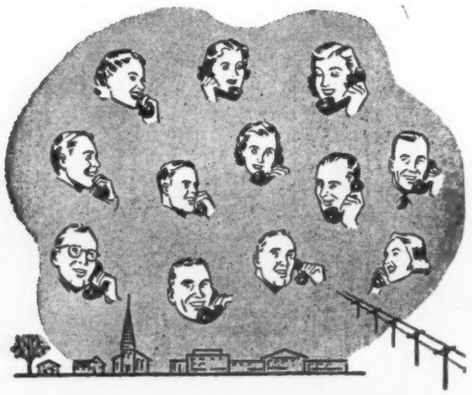
MANAGEMENT



Small Company Talk

"In the small company, we are boss, advisor and laborer all rolled up into one . . . so the importance of individual responsibility is not a new concept to us."

By Bill Corman
Contributing Editor

HI, NEIGHBOR! The 54th Annual Convention of the USITA is now history, and I am sure it is correct to say that everyone attending had a profitable, enjoyable, and, I believe, inspiring time. I know I did.

Looking back over past conventions, it is easy to see the theme I am about to discuss running through them all, but never, I think, with quite so much force and clearness as in this one.

On the afternoon of the second day, Mr. Fulton Lewis, Jr., radio commentator, appeared on the program of the Independent Pioneers. At the close of Mr. Lewis' scheduled speech, he offered to answer questions from the floor, and he got them thick and fast until it was time to call a halt to the session. One of the questions put to Mr. Lewis was something like this: "Who can do something about all these Socialistic evils which are gripping our country?"

And Mr. Lewis' answer was about as follows—The man who looks at you out of your mirror when you shave in the morning is the only man who can do anything about it!

That theme is what I want to talk about, for, in one form or another, it ran openly, forcefully through the entire convention. The Governor of Oklahoma, Honorable Johnston Murray, pointed it out in a different way. He said that the people of a particular industry, for example, were diligent in the defense of Free Enterprise *as it concerned their industry*, but paid scant if any attention to other proposed laws just as Socialistic, but which primarily concerned other industries. And he stressed the importance of individuals letting their views be known.

Senator Paul H. Douglas, from Illinois, pointed out that most people wanted to cut the budget, but in someone else's department, and that the defense of the one affected group was usually stronger than the offense of the majority who favored the cut. His point that it was up to the individual was unmistakable.

Mr. Douglas Stringfellow, survivor of the torture chambers of German extermination camps, pleaded, in oratory as moving and eloquent as any Bryan ever uttered, for individuals to forget party lines which are no longer clear, group animosities which now have no reason, and old allegiances which are no longer justified, and instead to support those ideas which our reason tells us are right and those men whose honesty and integrity we respect.

Along with this theme of individual responsibility, there could be little doubt among those attending that the small company has become a prominent factor in the thinking of industry leaders. Prominent not only because of the complexity of the small company problem, but also because of a gradual recognition of the vitally important place of and need for the small company in the communications industry.

Small Company Problem

MR. CLYDE BAILEY, in his perennially astute and eloquent report to the convention, said, "The small company problem has been with us for a number of years. This is the first time in the history of the industry, however, that a comprehensive program has been initiated for making a company-by-company survey in order to find out which are now in, or are likely to be confronted with, necessitous circumstances, and for making available to these companies the advice and help of men qualified to render operating, managerial, engineering, financial and other advice." In another place Mr. Bailey reiterated the traditional purpose of the USITA: "to preserve in full strength and vigor the integrity of our smaller units."

President Ray Dalton, in his sincere and straight-from-the-shoulder address to the delegates, made the same point concerning the importance of the small company to the industry, saying, "We can thank our organization into thousands of small companies for the fact that we remain privately-owned and a bulwark of old-fashioned Americanism against the ravages of what would destroy us."

And so it went throughout the convention—this recurring theme of individual responsibility and concurrent emphasis on the importance of the small company. To me the *combination* of those ideas seems a vitally important concept. As most of us in the small company business realize, individual responsibility is the principal key to success. In our small companies we have not many bosses to shoulder our responsibility, we have not many advisors on whom we can depend, and we have not many subordinates to do our labor for us. In the small company, we are boss, advisor, and laborer all rolled up into one, so that the importance of individual responsibility is not a new concept to us.

"Comeback Capacity"

BUT IN THE peculiar set of circumstances which has surrounded us within the past six years, many of us seem to have lost sight

of this important concept in the operation of our business. In the short space of those six years we have had the following factors to descend unmercifully upon us: a depression-followed-by-war accumulation of undone maintenance; the eruption of a demand for telephone service unlike anything envisioned before; the vicious circle of low rates, bad plant, and poor service forming a wall around us; the disheartening increase in wages and material costs; and last, but certainly not least, the next-to-impossibleness of securing adequate financing. That such circumstances. descending upon the head of a man who is at once commercial, plant, traffic and accounting manager of his company, should prove highly discouraging is not in the least surprising. What *is* surprising to many in the industry is that this condition has not created more widespread havoc than it actually has. For while the first impact of the blow was undeniably stunning, can anyone doubt that the comeback capacity and disaster defiance of many small companies is being presently and amply demonstrated. These companies have proved, if it needed proving, the basic soundness of the small unit in the telephone industry. The examples are plentiful in practically every state, and the lesson is clear. That there are many others who have not recovered from the impact of the last six years must also be obvious. It is on these companies that we must, and are now, concentrating our efforts. And it is to those companies, still entangled and baffled and without much hope, that this article is primarily addressed.

Whether you can see the way out in your own community or not—the way out is open to you. Commissions have more than evidenced friendliness and helpfulness to the small companies. Customers have more than evidenced willingness to pay adequate rates when they receive adequate service. Financing avenues have opened up within the past two years that effectively cover every feasible size of operation (and no specific size has been put on what may or may not be feasible, for the fact is that most—the great majority—of all companies are, or can be made, feasible operations). Examples of successful accomplishment in a company near your size are very probably within easy viewing distance of your town. The USITA'S Regional Small Company committees, and your state association, and your nearby large Independent or Bell companies—all of these are there to help you.

(*Please turn to page* 68)

BETTER . . .

. . . any way you look at it!

CHANCE STEEL 8-Way Cone Anchor . . .

Linemen or *Groundmen* like the Chance Steel Cone because it is light weight—easy to handle and the nut retainer makes it easy to install. *Foremen* and *Construction Superintendents* like it because rough treatment and heavy tamping won't break it. They save on installation time and get a good solid job Lighter weight, plus the fact that it stacks well makes the Steel Cone a favorite with *Sforekeepers. Engineers* specify it because they can depend on steel and because the 8 flat wedging surfaces and the flaring base mean greater holding power. *Purchasing Agents* prefer it because they get all these advantages for *less* money—solid reasons for economy-minded *Management* men who demand lasting performance Yes, *any way you look at it*, the Chance 8-Way Steel Cone is the *best* Cone Anchor buy on the market.

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When you buy one of Automatic's standardized small exchange switchboards, you get every modern feature you *need* without the expense of unnecessary frills.

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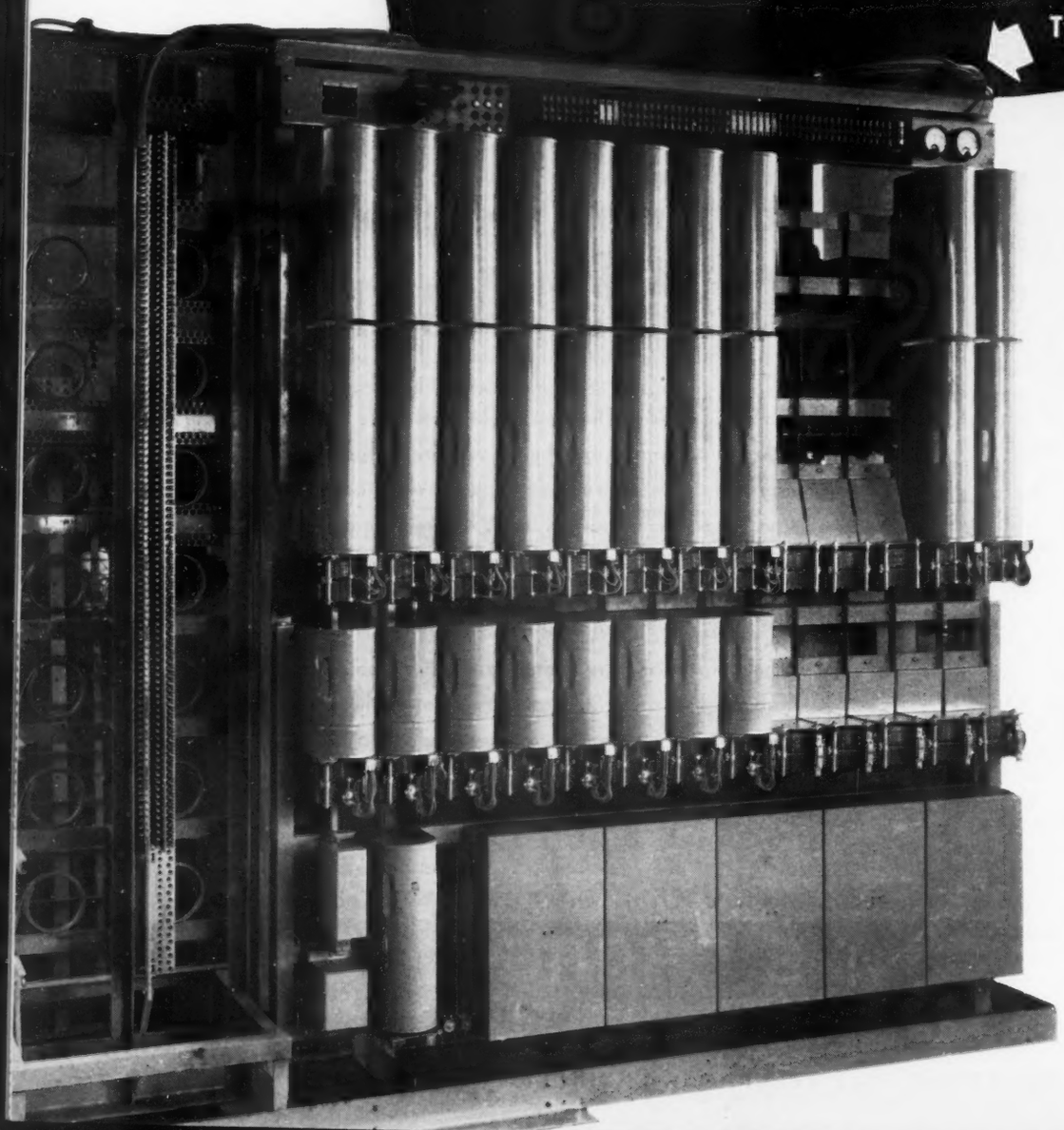
Choose from this full range of C-A-X and M-A-X switchboards the one that best suits your needs. Like hundreds of other telephone men you'll find it lasts longer, serves better and requires a minimum of maintenance. Your money goes farther with an Automatic Electric switchboard—*now and in the long run.*

STROWGER M·A·X TYPES

Type 10 M·A·X



TYPE M-A-X: A standard unit whic
may be equipped to serve up to
total of 50 metallic lines, includin
trunks to other exchanges as needed
Capacity, 10 telephones per lin
Switchboard may be equipped wit
any number of local links up to 7
using Strowger line finders an
Strowger connectors, and is wire
completely at the factory ready fo
shipment as a unit. Expansible to an
ultimate, but designed for maximu
equipment economy when limited t
50 lines ultimate.

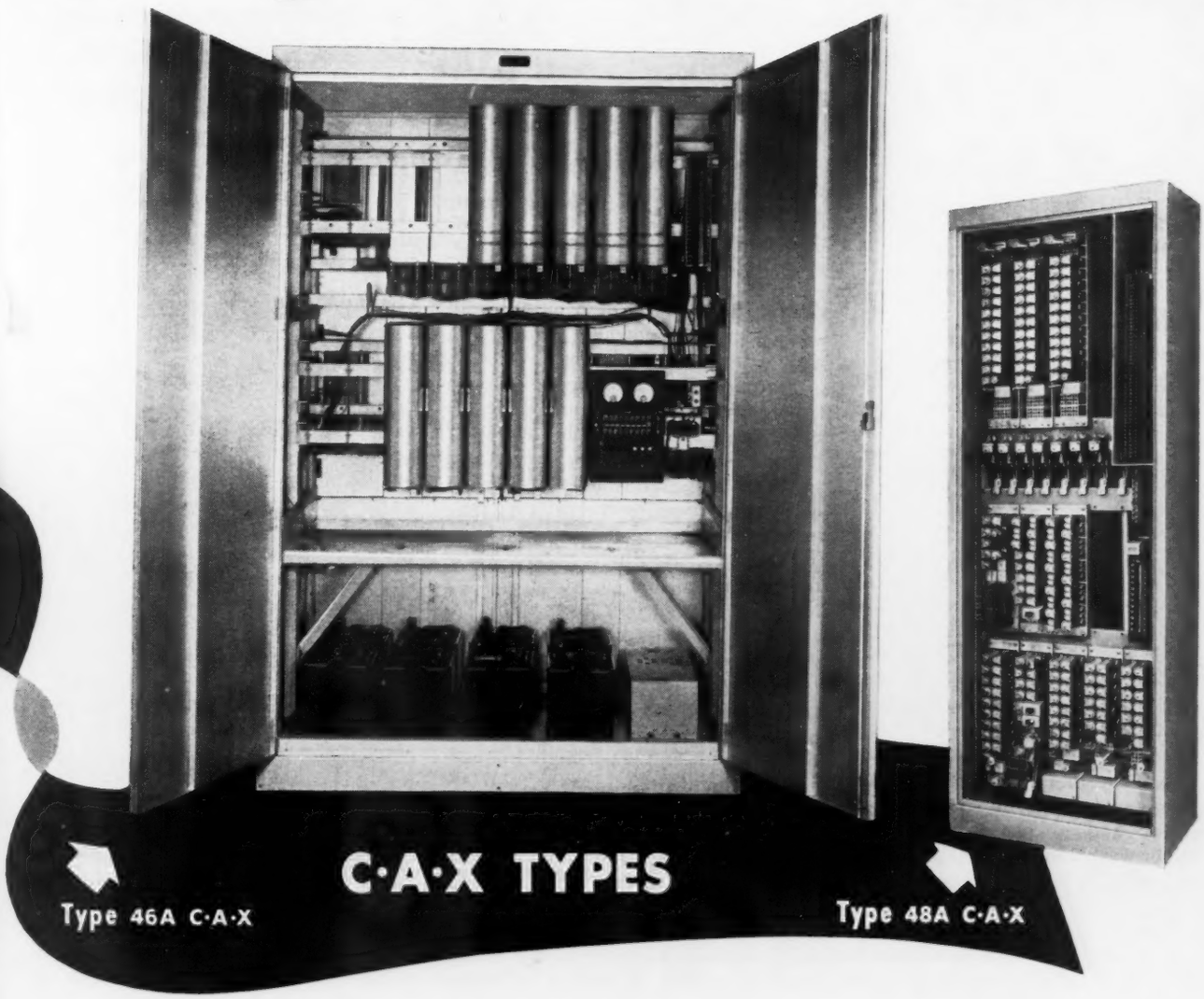
TYPE 10 M-A-X: Standard units i
two sizes which may be equipped t
serve up to 100 lines or up to 20
lines, including trunks to other e
changes as needed. For metallic line
with a maximum of 10 or 20 tel
phones per line as specified. Switch
board units accommodate either 10 o
13 local links, using Strowger lin
finders and Strowger 100-line conne
tors (with or without selectors) t
200-line connectors, and are wire
completely at the factory ready fo
shipment as a unit. Expansible to an
ultimate, but designed for maximu
equipment economy when limited t
100 lines or 200 lines ultimate.

ter!

with Automatic's

Standardized

Small Exchange Switchboards



Type 46A C·A·X

C·A·X TYPES

Type 48A C·A·X

TYPE 36A1 C-A-X: Unit completely equipped to serve 19 metallic lines having up to 10 central battery telephones per line, and up to 3 trunks to other exchanges. Grounded lines may be served through use of adapters. Switchboard is equipped with 3 or 4 links as needed, using rotary switch type finders and connectors, and is wired completely at the factory ready for shipment as a unit. Not expansible.

TYPE 46-A C-A-X: Standard unit may be equipped to serve up to a total of 50 lines, metallic only, including up to 8 trunks to other exchanges. Capacity, 10 telephones per line. Switchboard may be equipped with any number of local links up to 7, using rotary-switch type finders and Strowger connectors, and is wired completely at the factory ready for shipment as a unit. Ordinarily recommended only for exchanges requiring up to 50 lines ultimate, but second unit may be added for expansion up to 90 lines, and up to 14 local links.

TYPE 46-B C-A-X: Same as Type 46-A, but serves grounded lines also, and has capacity of 20 telephones per line.

TYPE 48-A C-A-X: Built around the long-life, Type 45 Rotary Switch. This board is a standard unit, equipped to serve 20 metallic lines, having up to 10 central battery telephones per line, with 4 links, and up to 3 trunks to other exchanges. Grounded lines may be served through use of adapters. Features include: "flash-busy" toll supervision, reverting calls by directory number, and provision for post-pay paystations. Wired completely at the factory and shipped as a unit.

TYPE 48-B C-A-X: Same as Type 48-A, but may be equipped to serve up to 40 lines and 6 links, and up to 6 trunks to other exchanges.

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Outstanding Conference Presented By USITA Plant Committee

W. M. Driggs, Bloomington, Ill., Chairman, USITA Plant Committee.

1951 Plant Conference continues high goal set by 1950 meeting. (This summary is concluded from the November 1, Fortnightly Telephone Engineer).

Activities of Radio Service Committee

RADIO SERVICE Committee Chairman C. H. McLean, Chicago, reviewed for the Plant Conference the decision rendered by the Federal Communications Commission on the pending question of assigning the band of frequencies 470 to 500 megacycles to common carriers for their exclusive use for mobile and point-to-point radiotelephone service. The FCC ruled in favor of assigning the band in question for television thus providing television with 70 additional television channels in the band from 470 to 890 megacycles.

"It is of interest," he said, "that in rendering their decision, the FCC took note of needs of the telephone industry and indicated they would consider ways and means of providing some relief in existing bands below 470 megacycles. Consequently the Radio Service Committee has currently recommended that a further brief be filed with the FCC for a band of frequencies between 216 and 470 megacycles for mobile and point-to-point use in the Independent field."

Mr. McLean stated that a second event of considerable importance from the standpoint of future implications for the telephone industry is the Bell System transcontinental microwave relay system.

"It is understood," he said, "that this coast-to-coast network, in addition to televised programs, will initially provide some 500,000 miles of telephone circuits, a small portion of the system's potential capacity. A project of this magnitude has little application in the Independent telephone industry, but the implications are obvious for the future since undoubtedly this technique in modified form will find an important place in the Independent telephone field. From the frequency assignment regulatory standpoint, we must not be caught in the position we now find ourselves in —the lower frequency bands with only a few shared channels available.

"We feel that early representation should be made for assignments in the microwave region, for the telephone industry is a natural to utilize this medium to the advantage of all concerned in rendering a service of public interest, convenience and necessity. To this end, the Radio Service Committee, in addition to recommending the filing of a further brief with FCC for frequencies in the spectrum below 470 megacycles, has further recommended to the Association's executives that we file a petition for suitable assignments in the various bands of ultra-high and super-high frequencies in the realm of 1,000 to 6,000 megacycles on behalf of the Independent telephone industry."

Reporting on the question of television antenna service, Mr. McLean stated that in "blind areas where television programs cannot be successfully received direct from the broadcasting station, television reception is obtained by means of what is termed a 'Community Antenna Television System.' "

"This," he said, "is accomplished by locating a master community antenna at a high point and directing it towards the center in which the television station or stations are located. One or more programs are received by means of this master antenna and carried by a co-axial-type cable to the settled areas where distribution is made to the television set owners."

Mr. McLean stated that to accomplish this distribution, the usual method is to arrange to contact telephone or electric light poles to carry the main co-axial cable and the distribution to the locations where service is required. In addition amplifiers are located at intervals on the pole line to offset the co-axial cable losses. A charge is made to the television set owner to cover the service rendered and the maintenance of the wire facilities.

"Originally," he said, "telephone companies were loath to treat these parties as regular joint users as they cannot be considered as technically qualified as a power company or telephone company in connection with methods of construction. It was found in some cases, however, where the telephone company refused to permit contacts the electric light company would agree to permit the contacts; consequently the television cable would occupy the positions usually reserved for the telephone company where joint pole agreements are in effect.

"It is also understood that in certain areas where telephone companies have turned down requests for contacts, the exponents of the system have approached the state commissions who have ordered the companies to provide the contacts . . . It is evident at this time that if telephone companies are not willing to undertake on their own the providing of the necessary television distribution systems they have no alternative but to accede to the requests for contacts. The fact that copper requirements to provide such service would come out of the telephone companies' allotment, should they undertake this work for their own account, can be stated as another deterrent in addition to the other risks involved."

Mr. McLean stated that it was his understanding that there are a number of instances where the telephone companies have acceded to requests for contacts after first signing a comprehensive agreement with the television antenna entity.

"This permission," he said, "already granted by some of the telephone companies, has served as a 'foot-in-the-door' for a growing number of enthusiastic equipment salesmen who are now covering all terri-

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tories in the U.S.A. . . . It would appear, when considering the various risks involved, that Independent telephone companies should carefully investigate the television antenna question before entering into agreements to provide contacts."

Transmission

THE PAPER prepared by the USITA Sub-Committee on Transmission was read to the Plant Conference by P. K. Fugate, Springfield, Ill. It reported that in recent years, there has been a substantial "up grading" of transmission in many Independent exchanges. The importance of good transmission is now appreciated by every alert and progressive plant manager and the sub-committee recommended that Independent companies should continue this program of improving talking circuits, particularly in the direction of providing a more uniform grade of transmission on both toll and local exchange calls making special effort to bring transmission on rural lines up to present day standards.

The sub-committee recommended that Independent companies that have not previously engaged in transmission testing, and that may now wish to do so could institute a transmission program along any or all of the following lines:

(1) Make transmission tests only in connection with specific complaints of poor transmission.

(2) Make transmission measurements on each new subscriber's loop at time the phone is installed.

(3) Make wholesale transmission rehabilitation checks of all toll lines, C.O. cord circuits, and long rural subscribers lines on those exchanges where this has not previously been done.

(4) Set up a program of routine checking on an annual basis the transmission on toll lines, cord circuits, long rural subscribers lines, etc. in each exchange.

In considering the desirability of incurring the expense of instituting transmission test in any exchange, it should be kept in mind that transmission tests differ from ordinary continuity (i.e., ohmmeter tests) in their ability to detect excessive loss in a circuit. This results from the fact the performance of the circuit or equipment under test is determined at talking frequencies and any factor which would tend to attenuate the subscriber's voice will be picked up in this type of measurement. A direct current ohmmeter test will often fail to detect sources of substantial

(*Please turn to page* 42)

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Advertising, like that on the opposite page, explains these telephone "facts of life" and helps everyone understand the need for a financially healthy telephone industry.

An advertisement of the

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It Takes 500 Tons of Equipment for Just One Telephone Exchange

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There are 1800 crossbar switches, 4000 multi-contact relays and 65,000 conventional relays. These automatic switching mechanisms open or close millions of telephone circuit paths.

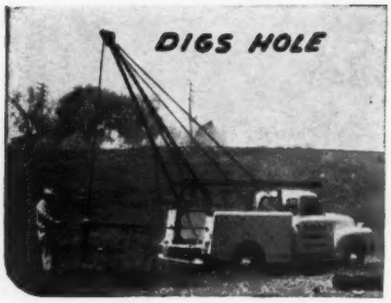
Eighty miles of cable are needed to connect all this apparatus. There are 2,600,000 soldered connections, each one a careful hand operation.

All that is for only one Telephone Exchange to serve one community. At present-day prices, the cost runs to $1,500,000.

The money for these new facilities must come largely from investors who are willing to put their savings in the business.

Only through reasonable earnings can the telephone company attract the new money that is needed to do the job.

BELL TELEPHONE SYSTEM



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★ Answers the need for a two man construction crew

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(Continued from page 39)

loss particularly in C.O. equipment and the subscriber's telephone.

Members of the USITA Plant Sub-Committee on Transmission, Testing, and Inductive Interference are: B. C. Burden, director, Lincoln, Neb.; B. N. Darlington, Tampa, Fla.; R. E. Lawrence, Tarboro, N. C.; R. A. Schultz, Madison, Wisc.; T. J. Fleming, Santa Monica, Calif.; W. J. Melchers, Owosso, Mich.; P. K. Fugate, Springfield, Ill., and Hugh Pulliam, Cookeville, Tenn.

Other valuable papers presented at the Plant Conference included "Preconversion Outside Plant Rehabilitation", by A. A. Wilson, Illinois Consolidated Telephone Co., Mattoon, Ill., and "New Communication Developments", by Ray Blain, office of the Chief Signal Officer, Washington, D. C.

Mr. Blain stated that the Independent telephone industry is ever on the alert in its search for new ideas, methods, tools and equipment that will prove better and more economical in the provision of good, reliable telephone service. "The history of our industry," he said, "down through the years, indicates constant changes and betterments. There is every indication that changes will continue to be made and that these changes will contribute to the progress of telephony."

Presenting many new ideas for the consideration of industry members, Mr. Blain said, "It is our opinion that you would be well advised to consider the possibility of adapting them to your operations. It is with this thought in mind that the Plant Committee is undertaking this means of advising the Independent telephone industry of new methods, tools and equipment available."

Reporting that a considerable amount of research and development work is being done throughout the world on electronic switching, Mr. Blain said, "Today, vast quantities of electronic equipments are in use in telephone exchanges and recently mechanical-electronic exchanges have been introduced where electronic apparatus is used to control switching functions. It is apparent that the rapid developments in electronic systems, greatly accentuated by the war effort, are advancing the date upon which electronic telephone switching exchanges will become available.

"The advantages of the all-electronic system should be: (1) A reduction in weight and space required, (2) freedom from contact trouble,

(Please turn to page 44)

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providing a quieter talking circuit free from contact noises which are sometimes produced by contacts in mechanical switching systems, and (3) less susceptibility to dust, temperature, and humidity.

"The disadvantages existing at the present time are: (1) The power required for vacuum tube filaments and (2) the relatively short life of vacuum tubes requiring a greater amount of automatic supervision of circuitry."

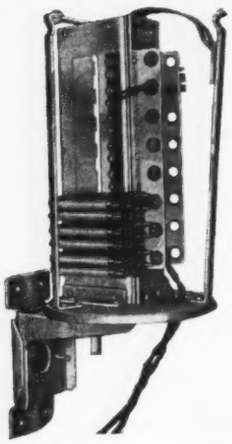
Several methods of electronic switching have been investigated he stated. One is based on pulse time modulation, another on pulse frequency modulation, and a third on pulse code selection.

"The system in which the switching functions are carried out by pulse code selection using the decimal or binary code system is interesting," he stated. "In this system, the talking paths are carried out on pulse amplitude modulated time division multiplexed circuits in which any per cent of the subscribers, according to traffic requirements, can be engaged in two-way conversations. Toll facilities can also be provided. Amplification can be given for each connection.

"Inexpensive memory circuits may replace the expensive memory of an electro-mechanical switching system. The selection of a large number of channels can be achieved by a small number of code elements. It is not beyond the bounds of possibility that one cathode ray storage tube may replace 128 conventional electromechanical switches."

Mr. Blain reported that recent improvements in transistors, giving them extremely long life, together with the fact that they do not require power such as vacuum tube filaments, indicate that they may be used in electronic switching systems to replace vacuum tubes. "This," he said, "should overcome one of the serious objections to electronic switching systems. Selenium rectifiers and crystal diodes, such as the germanium rectifier, which have very long life and whose cost of manufacture is becoming less due to the enormous increase in their use in television and electronic circuits, provide cheap gating means to replace the more expensive electromagnetic relays in performing switching functions.

"In conclusion, it might be stated that the great advances now being made in electronic circuitry, apparatus, and component parts, the reduction in cost due to quantity used, indicate the probability of the introduction of electronic switching telephone exchange systems for public use."—THE END.



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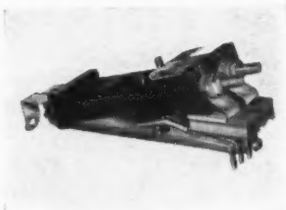

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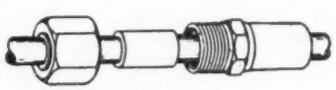

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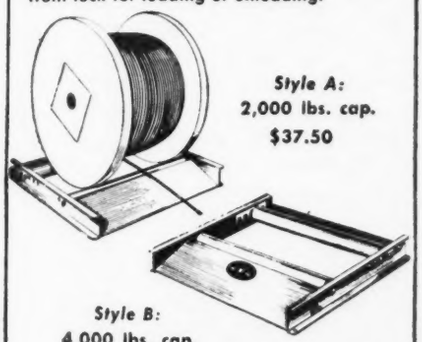

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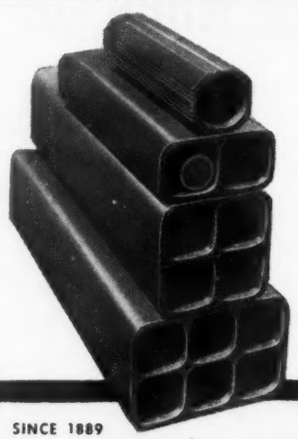

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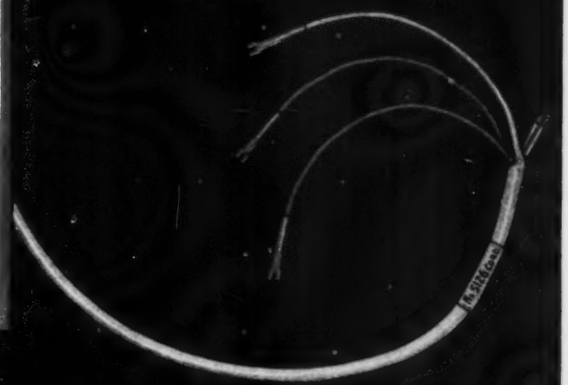

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While valuable in all types of line construction, this characteristic is particularly important in many joint use installations. Where street congestion necessitates loading poles with cables, drop wires, power circuits, lights, etc., the added stiffness and strength make permanent stable tensions possible and contribute to both general sightliness and good public relations.

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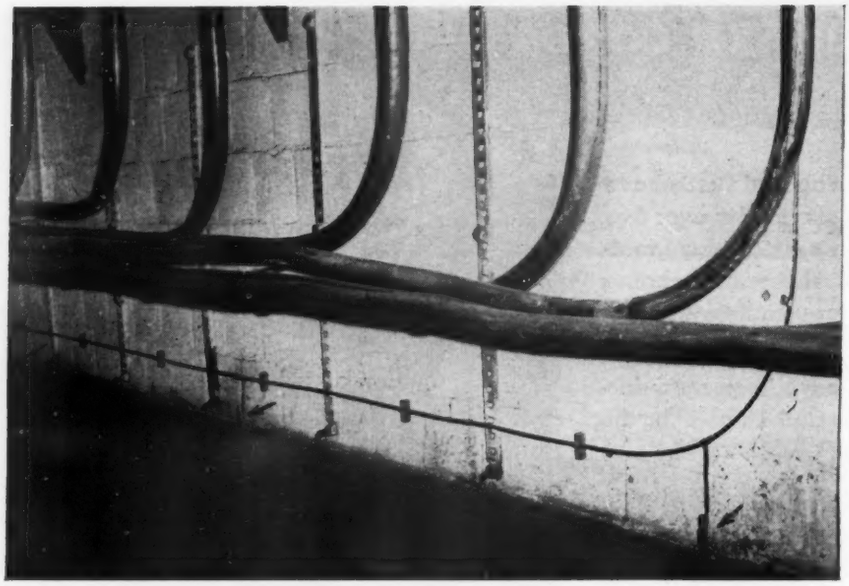


Fig. 67—Part of multiple ground system installed in cable vault of a 20,000-line central office. Arrows point to ends of ½" x 10'0" "Copperweld" ground rods protruding through cement floor and connected to #0 copper cable used for the common lead to the main frame ground bus.

MODERN Central Office MAINTENANCE Practices

Section VI-A of Mr. Reed's article discusses—(1) Ground Connections, (2) Factors Influencing Conductivity of Office Grounds, & (3) Practical Grounding Methods. (Section VI-B of this article will appear in the December FORTNIGHTLY TELEPHONE ENGINEER.)

By John S. Reed

Lincoln Telephone & Telegraph Co.,
Lincoln, Nebraska

IN THE CENTRAL office, various items of equipment are connected to a common lead or bus that goes to an established earth connection. This ground connection is needed primarily for the proper operation and protection of the equipment and the protection of the central office workers from shock hazards.

The following items of plant and office equipment are grounded at the central office:

(1) Sheaths of telephone cable entering the office.

(2) Line protection equipment on main distributing frame.

(3) Central office battery (usually on the positive side).

(4) Conduit system in the building.

(5) Power protection panel.

(6) Ringing equipment (for divided ringing).

Ground connections for the foregoing are illustrated in *Figures* 67 to 69.

In many offices all ground connections may go to the main frame ground bus which, in turn, is connected to earth. In other offices separate grounds may be provided for some of the equipment as required by design. Thus, the power protection panel may have its own ground, with other ground connections going to the main frame ground bus.

Factors Influencing Conductivity of Office Grounds

A CENTRAL office ground should have a very low resistance which does not vary to an appreciable extent, to avoid failure of the protective equipment and malfunction of the office apparatus. The conductivity of the office ground is influenced by the resistance of the ground path, the availability of existing permanent low resistance grounds, and the length and number of ground rods installed.

The resistance of the ground path is made up of the following components:

(1) Resistance of ground wire and ground rod.

(2) Contact resistance between the ground rod and the soil.

(3) The resistance of the soil.

The resistance of the ground lead and ground rod is usually negligible. Most central office ground leads are #0 gauge copper cable, though #4 copper cable or #6 solid copper wire may be used for leads to grounds installed separately from the main ground, also to bond the conduit system to the main ground, as indicated in *Figure* 69.

The contact resistance depends on the composition and the condition of the soil surrounding the ground rod. Contrary to general opinion, corrosion salts on the ground rod do not affect the contact resistance as long as the rod is not coated with non-conducting substances such as paint, asphalt, or grease, and the ground is moist.

Soil resistance has the most important influence on the ground conductivity. It is affected by the composition, mineral content, percentage of moisture, and the temperature of the soil.

Soil is composed of loam, clay, sand, or gravel, or any combination of these elements. Clay and loam have the lowest resistance. Next lowest is clay or loam mixed with sand or gravel, then comes sand alone. Gravel has the highest resistance and makes the poorest ground.

The mineral content of the soil affects the soil resistance to a considerable degree. Where soil in a certain locality is deficient in minerals, the addition of salt to the soil will greatly improve the conductivity of the ground, provided the soil is sufficiently moist. However, this method is not recommended for central office grounds because of the danger of accelerating the corrosion of the ground lead and ground rod due to the flow of direct current into the ground from the central office battery.

The quality of moisture present in the soil is probably the most important factor in obtaining low ground resistance. It has been found that if the soil contains less than 30 percent moisture on the average, a high resistance ground is likely to result.

Soil resistance varies with the temperature of the soil, being comparitively low in the summer time and comparatively high in the winter

Power Cross Protector

by COOK

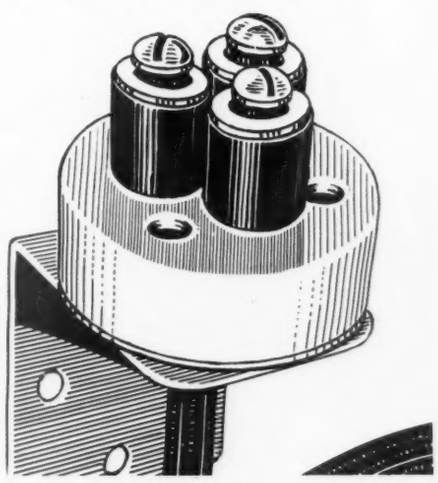
THE CONTINUED extension of the practice of joint occupancy of wood poles by communications and power circuits of higher voltages has created a need for heavy duty arresters on the communication circuits.

In the event of contact between the power and communication circuits, the arresters must be capable of carrying the fault current long enough to allow the power breakers to operate and de-energize the power circuit.

It should be remembered that a large margin between full load current and probable fault current assures rapid operation of the power breakers. Therefore, in placing these arresters the total impedance of the fault current path should be kept sufficiently low to assure a large fault current. This impedance can be lowered by reducing the regular spacing of the arresters along the line. These arresters, distributed along the telephone line, also give considerable protection from lightning damage.

The HI-CAP Power Cross Protection consists of three carbon electrodes mounted on a porcelain base and enclosed in an alloy cover, permanently clinched in place. It has three #10 B&S insulated copper wire leads and a bracket for quick easy mounting and installation on pole or crossarm. Each electrode is equipped with a fusible element which melts and further reduces the impedance of the fault current path when the fault current continues over an extensive period.

Unit with the cover removed showing porcelain base and the position of carbon electrodes.



COOK ELECTRIC Company

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time. If a ground rod does not extend below the frost line, trouble will be experienced with the ground going high in resistance during freezing weather. It is advisable, therefore, to make sure the ground rod extends several feet below the frost level generally encountered in the particular locality.

In analyzing the effect of the soil characteristics on the ground resistance it has been found that most of this resistance occurs within six to fifteen feet of the ground rod. To account for this phenomenon, the concentric shell theory has been propounded as follows:

Referring to *Figure* 70 which shows a cross-section of the soil surrounding the ground rod, the full lines represent the boundaries of the concentric shells. Shell No. 1 immediately surrounding the ground rod is high in resistance because the volume of the earth contained therein is small. Shell No. 2 is lower in resistance since it contains a greater volume of earth. As more shells are included, the resistance goes down until it adds very little to the resistance of the first few shells. Careful measurements have shown that, under average conditions of soil density and moisture content, 90 percent of the soil resistance occurs within an earth shell of 6 to 10 feet radius around the ground rod.

Ground Rod Dimensions— Use of Multiple Grounds

THE LENGTH of a ground rod has a definite effect on the conductivity of the ground. From *Figure* 71 it can be seen that the resistance of a ground goes down with the increase in the depth to which the rod is driven, up to a certain point. Beyond this point, depending on the condition of the soil and other factors, driving the rod deeper only results in a slight decrease in the resistance.

The diameter of the ground rod is usually of little consequence as far as the total ground resistance is concerned. This diameter need only be as small as practicable, consistent with ease of driving, generally from ½ inch to 1 inch.

Multiple grounds are employed when it is desired to obtain an extremely low resistance ground and an extensive water supply system is not available or connection to the system

(*Please turn to page* 50)

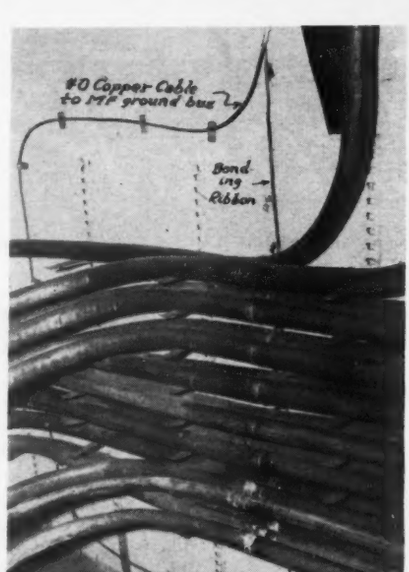

Fig. 68—Method of bonding entrance cable to the central office ground.

Fig. 69—Bonding of electrical conduit system to central office ground. Arrow points to special grund clamps used for connecting the bonding wire (#6 gauge solid copper wire) to the conduits.

Construction
With the Doubl
and America'
make line splices faster with nicopres splicing sleeves . .
For line splices that *can't* pull out, ma in half the time, specify *Nicopress* Spl ing Sleeves!
Nothing could be simpler than making splice in a jiffy with *Nicopress* equipme Here's all you do:
1. Clean the wire end
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The result is a splice that will hold u the life of the wire. Specify *Nicopre* the finest in Splicing Sleeves!
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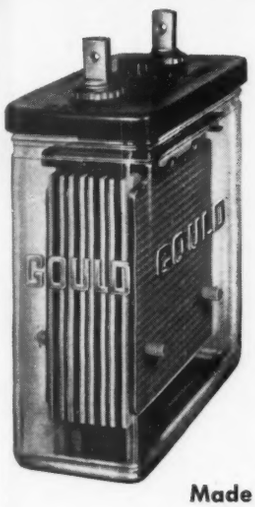

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For long life and uniform dependable service, no other telephone battery equals the Gould Planté. It has rolled up amazing performance records, remaining in active full-float service for 20 years, 30 years and longer!

In the Planté, *all* of each positive plate is pure lead, containing *no* antimonial impurities. Thus, Gould has eliminated the primary cause of self-discharge, capacity losses and shortened battery life. Planté batteries float at constant voltage and maintain rated capacity all their life. Because they almost never need service, maintenance is negligible. If you would cut battery costs to a minimum, choose Planté.

Made by GOULD-NATIONAL BATTERIES, INC.

reversible • weatherproof

reliable "RU" cable terminal

The results of Reliable's policy of endless research and testing of parts and materials, together with a rugged design simplicity are apparent in this Reversible, Unprotected Terminal.

The flat fanning face plate, in combination with a sturdy non-corrosive aluminum cover which surrounds the wires both front and back, creates an unusually weatherproof terminal.

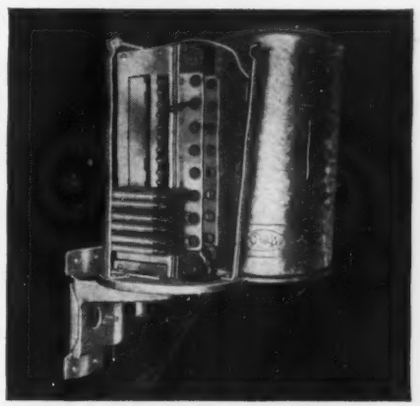
The reversible sliding aluminum cover also permits stub to be mounted at either top or bottom.

Such other features as: detachable mounting bracket; aluminum alloy chamber; guide rings for jumpers; beveled washers; perfect sealing nozzle, etc. add greatly to the installation and service convenience of the Reliable "RU" Terminal, as well as providing an assurance of service life beyond actual field requirements. Ask for complete information on sizes and prices.

"Reliable" identifies the quality

cook type S-20

pole cable terminal



Can be used as a protected or unprotected terminal. Made in 6, 11, 16, or 26 pair capacity.

Cook Type S-20 Pole Cable Terminals are carefully engineered to offer the user:

MAXIMUM ECONOMY—because Cook Type H 20 Protector Units, containing fuses and primary and secondary lightning arresters, are added only as they are required.

MAXIMUM CONVENIENCE for installation and servicing. Drop wire connections are at front. Drops are led through individual insulating knockout holes. Self-soldering nozzle lies close to pole. Hood locks in raised position for working. Separate mounting bracket eliminates gaining of pole and provides easy installation.

MAXIMUM PERFORMANCE when used separately or as part of the Cook Trans-Mount System of Protection and Distribution. S-20 is of all steel construction, hot galvanized. Complete terminal designed for maximum insulation.

Distributed by STROMBERG-CARLSON

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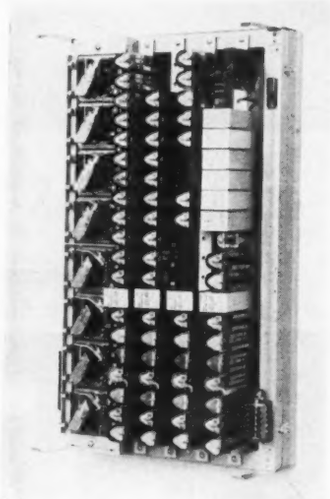

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Ericsson

TELEPHONE EQUIPMENT

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REASONABLY PRICED

EASILY INSTALLED

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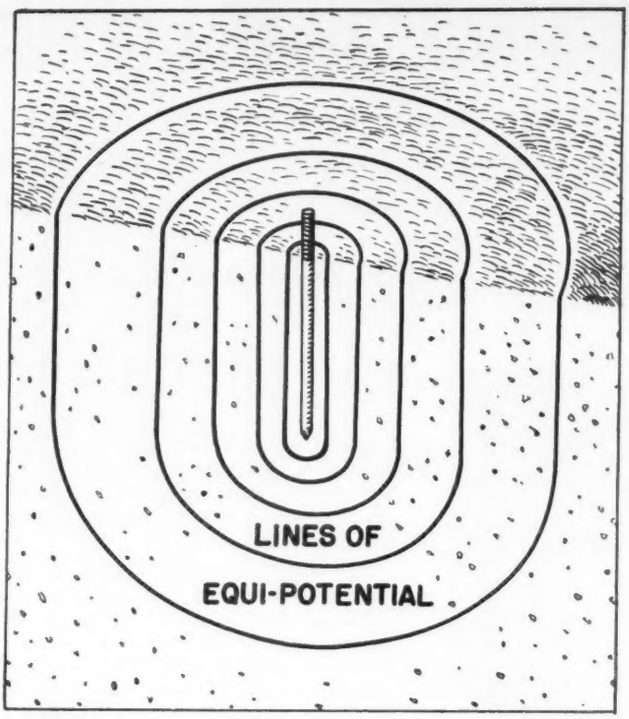

Fig. 70—Illustrating concentric shell theory. (Courtesy of Associated Research Incorporated.)

is not desired. If hard pan is encountered a short distance below the surface of the soil so that short rods would have to be used, or the soil is high in resistance, connecting three or more driven grounds in multiple will greatly reduce the ground resistance. The ground rods should be placed 6 to 15 feet apart in a row depending on the depth to which they are driven and the soil resistance as shown in *Figure* 72. The amount of separation may be determined by measuring the resistance from the first driven rod to any auxiliary rod located at successively greater distances until a point is reached where the resistance is no longer constant but begins to rise. The distance between the first rod and this point then determines the amount of separation between each of the rods.

Practical Grounding Methods

OLD TIME central office ground installations made use of a spiral copper plate connected at the ends to a heavy copper cable and buried in a coke-filled pit four to six feet in the ground. Such grounds have given good service, but in many localities

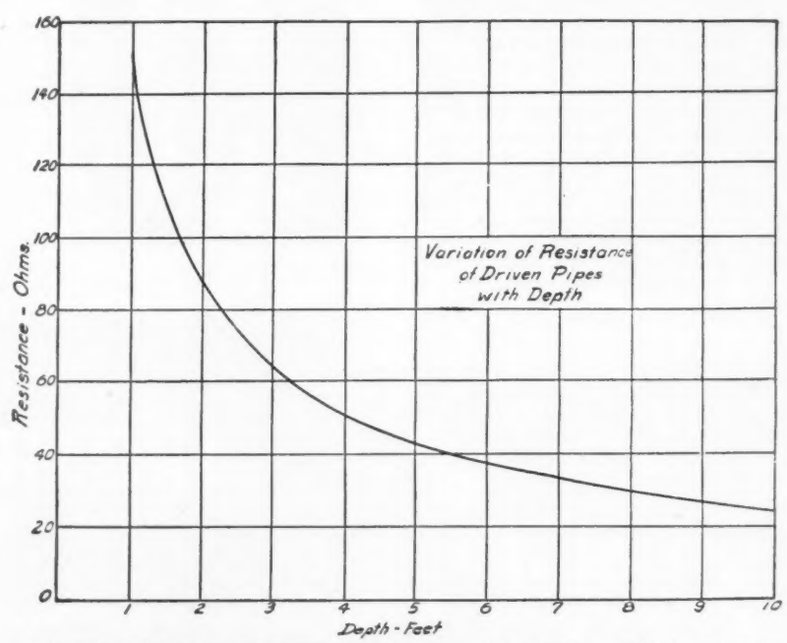

Fig. 71—Variation of ground resistance with depth to which ground rod is driven. (Courtesy of James G. Biddle Company.)

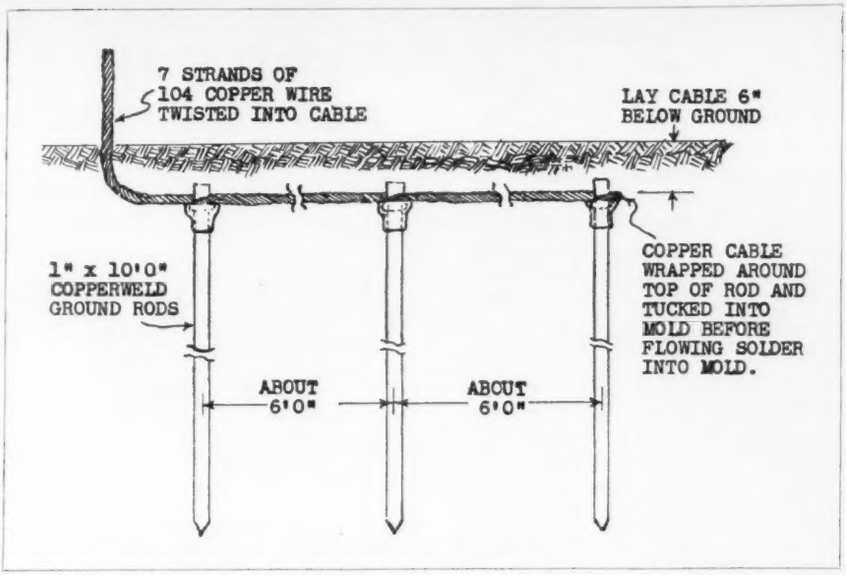

Fig. 72—Multiple ground system designed for average-size central office, using 1" x 10'0" "Copperweld" ground rods.

they are subject to corrosion particularly of the ground lead.

An effective and economical type of central office ground is obtained by installing copperweld ground rods connected in multiple with a heavy copper cable as shown in *Figure* 72. The tops of the rods are driven below the surface of the ground and the cable is soldered directly to the rods for a permanent low resistance connection. The cable is laid in a trench which may be filled with clean coke if experience shows that the copper lead can be protected from corrosion in this manner.

A suggested method of protecting the cable and its connections to the ground rods is to apply a pliable high-dielectric plastic compound, such as Kearney Airseal, around the cable and its connections. The use of this compound will not affect the conductivity of the ground since the ground rods themselves provide practically the entire path for electric currents into the earth. If the ground is installed inside the building, as indicated in *Figure* 67, it is preferable to leave the tops of the rods and the entire ground lead exposed to air, rather than to bury them completely, to avoid possible corrosion at these

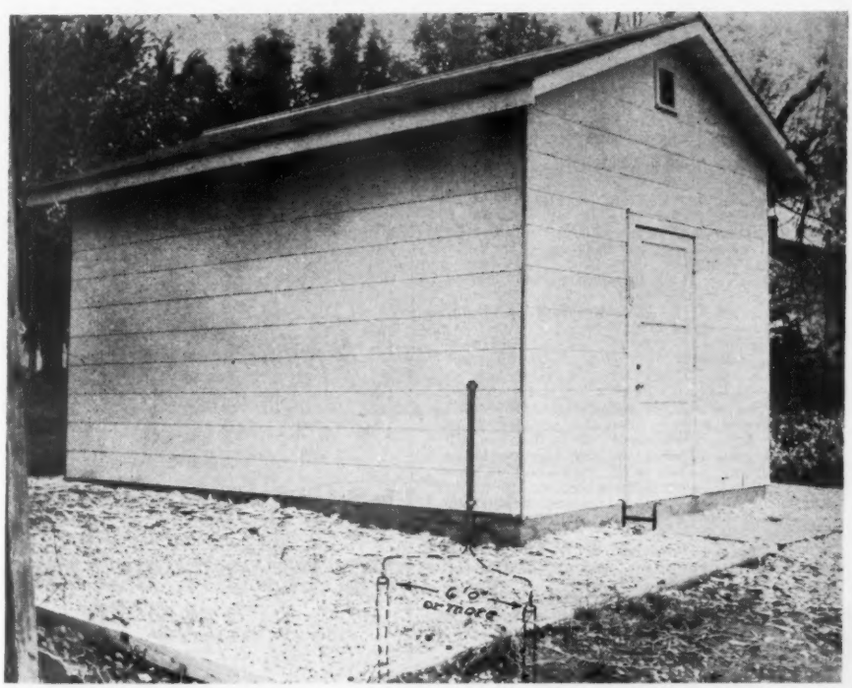

Fig. 73—Method of installing National Carbon Division graphite anodes for small office ground as shown by dashed outline. Note use of half-round cable molding for protecting spliced connection of anode tails to ground lead entering

Joining a Continent

PAUSING only long enough to change mounts, pony express riders raced forward with their messages. Completion of the transcontinental telegraph was another step forward in message transmission. It was still a far cry, though, to the complexities of today's modern communication systems.

Almost from the birth of wire communication Hemingray Insulators have supplied the requirements of the industry. In fact, for more than eighty years now Hemingray Insulators have been dependably serving the communication systems of the world.

Experience and continuous research have made Hemingray Insulators the finest obtainable today. They are available at most jobbers for immediate delivery . . . in any quantity . . . in types for all telephone and telegraph pole lines.

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AMERICAN STRUCTURAL PRODUCTS COMPANY
Muncie, Indiana

SUBSIDIARY OF OWENS-ILLINOIS GLASS COMPANY

points. During Word War II, graphite anodes were first employed for grounding purposes in small central offices, to conserve copper and steel used in standard ground rods. These anodes were orginally developed for use in cathodic protection of pipe lines and other metallic structures exposed to severe soil corrosion. The graphite anodes used in central office grounding are 2 inches in diameter and 80 inches long and are equipped with neoprene jacketed stranded copper leads. The end of the insulated lead is inserted inside the end of the graphite rod, thus preventing corrosion of the lead at this point when the rod is buried in the ground.

Two graphite anodes are placed in a central office ground installation as illustrated in *Figure* 73. Two holes are bored about 8'6" deep with a six-inch auger and the anodes are inserted in the holes. *(To be continued in the December* 1, 1951 *issue of Fortnightly Telephone Engineer.)*

Statement of the Ownership, Management, and Circulation Required by the Acts of Congress of August 24, 1912, as amended by the Acts of March 3, 1933, and July 2, 1946 (Title 39, United States Code, Section 233)
of Telephone Engineer & Management, published monthly at Pontiac, Illinois, for October 1, 1951.

1. The names and addresses of the publisher, editor, managing editor, and business managers are:
Publisher—Telephone Engineer Publishing Corp., 7720 Sheridan Road, Chicago, Ill.
Editor—Ray W. Smith, 7720 Sheridan Road, Chicago, Ill.
Managing Editor—John G. Reynolds, 7720 Sheridan Road, Chicago, Ill.
Business Managers, Ray W. & Roy F. Smith, 7720 Sheridan Road, Chicago, Ill.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)
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4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.)

Ray W. Smith, Editor
Sworn to and subscribed before me this 8th day of October, 1951
Virginia McCollum
(My commission expires August 27, 1955)

DOUGLAS FIR PONY CROSSARMS

6 pin	per 100	$208.80
8 pin	" "	243.80
10 pin	" "	313.20

AMERTEL 12-85 HTL GALVANIZED LINE WIRE

Less than 1500 Lbs.	$13.95
1500 to 3999 Lbs.	13.70

GLASS INSULATORS

H9 Pony Type, per 100	$6.60
H12 Double Groove, per 100	6.83
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CHANCE EXPANDING ANCHORS

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C-6870 Eight way	ea.	1.60
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— and —

A complete stock of rods for the above.

SEIMENS MARTIN GUY STRAND

250 and 500 foot coils

5/16" per thousand feet	$37.75
¼" per thousand feet	28.28

LOCUST PINS

1¼" x 8"	per 100	$6.97
1½" x 9"	" "	9.50

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1½" x 2" x 10"	per 100	$5.00
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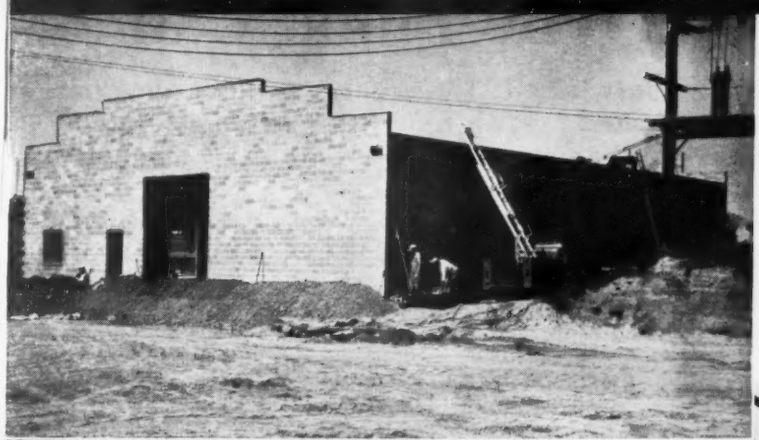
FLOODED OUT...

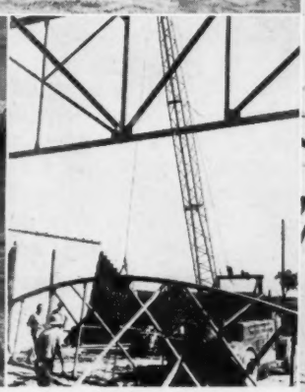
GREAT TOPEKA FLOOD, July 13, 1951. Pictures show inundation of the Cable Spinning Equipment Company. Plant and machine tools have been renovated, with the loss of only one motor.

But We're Coming Back Stronger Than Ever!

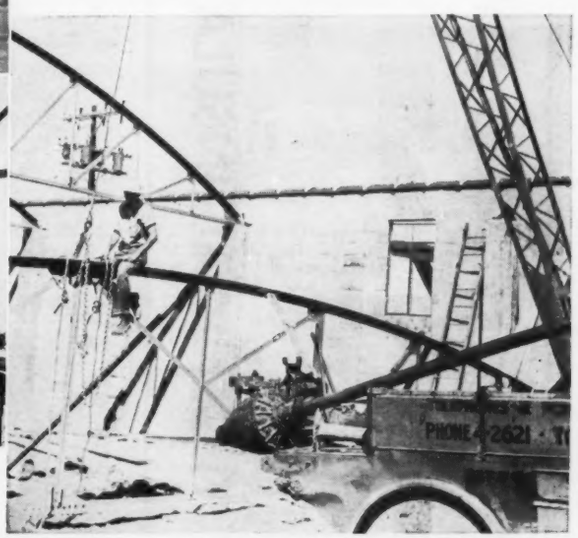


As the flood crested, ground was broken for new plants on higher ground. Disaster proved the fine loyalty of our employees. Not one quit the job. Many worked day and night with our trucks to evacuate flood refugees. We also want to thank our customers for their consideration and patience during the emergency. Soon we will offer greatly expanded production facilities to render an even better service in the telephone field.

Our employees pitched in to build new plants.



Our telephone construction equipment was utilized.



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CABLE SPINNING EQUIPMENT CO.

TOPEKA, KANSAS Phone 2-7234

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ENDURPRENE • BRIDLE • DROP •

MANUFACTURED BY GENERAL INSULATED WIRE WORKS, INC., PROVIDENCE, R.I.

On July 13, 1951 the flood waters nearly covered the home of the Cable Spinning Equipment Co., Topeka, Kansas.

"When The Flood Came"

"Friday, July 13, 1951, was an unlucky day for Topeka, Kansas . . . The Kaw River became a raging 'monster,' spilling its waters over the dikes and into homes, stores and industries."

By Mrs. Ellen Neale

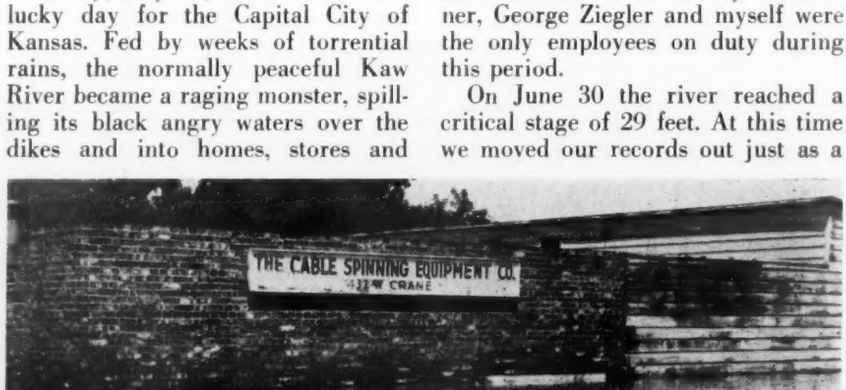
Cable Spinning Equipment Co.
Topeka, Kansas

THIS IS the story of our company's part in the Kansas flood of July, 1951—the costliest in the Nation's history, over three-quarters of a billion dollars worth of destruction.

Friday, July 13, 1951, was an unlucky day for the Capital City of Kansas. Fed by weeks of torrential rains, the normally peaceful Kaw River became a raging monster, spilling its black angry waters over the dikes and into homes, stores and industries throughout the low Northern sections of Topeka and the industrial district south of the river.

The Cable Spinning Equipment Co. plant was, as usual, closed for annual vacations the last week in June and first week in July. Al Garner, George Ziegler and myself were the only employees on duty during this period.

On June 30 the river reached a critical stage of 29 feet. At this time we moved our records out just as a



Plant and machine tools of Cable Spinning Equipment Co. have been renovated with loss of only one motor.

Among the employees who made it possible for the Cable Spinning Equipment Co. to return to complete production were (l. to r.)—R. Adams, M. Crow and E. Madrid.

precautionary measure, not really thinking the river would ever flood the south side. The river started falling, so we moved back in before the rest of the employees came back to work on July 9.

We worked the 9th and 10th of July, when the river started up again. There was a warning out that the river would go at least 31 feet, and the dikes were so spongy it was doubtful that they could possibly hold.

The morning of July 11, I received a call from George Ziegler, at 6:00 A.M., that the water was backing up on Kansas Ave. and the prediction was the river would go to 32 feet. The dike on the south side was built to take a 32-feet crest only. We started moving as much equipment as we could find storage for immediately.

We moved everything up at least four feet off the floor and took all motors loose on the machines and placed them high on benches. We moved our typewriters, calculators and 1949, 1950 and 1951 record files out. We then sand bagged the building and closed and locked the doors at 11:30 A.M. This was all done in a down-pour of rain.

WE'RE SORRY . . . but we did get our colors mixed and through error the Hubbard & Co. advertisement on page 6 of the October 1 Fortnightly Telephone Engineer ran "green" instead of "Copperweld Orange" as specified. To correct the error we have republished the ad on this page in its correct color. . . .

A most urgent request that everybody leave North Topeka, was given by our Mayor. Our employees went out in trucks, furnished by Neale Construction Co. to move people who were ready to leave the threatened area.

They worked most of the night on

(Please turn to page 66)

HANG THE LOAD ON HUBBARD HARDWARE

HUBBARD-COPPERWELD GROUND RODS

Hubbard-Copperweld Ground Rods have the rigidity of steel necessary for driving . . . their thick sheath of molten-welded copper protects them from deterioration. They offer assured protection, when installed to a sufficient depth to reach permanent moisture. They come in diameters from ⅜ to 1-inch and in lengths from 5 to 40 feet. Clamps may be had as illustrated, with either square head set screw or safety set screw.

HUBBARD HARDWARE FOR THE TELEPHONE LINE

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Cable Suspension Material—Wireholders
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REA Telephone Hardware

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Anchor Rods—Ground Rods and Clamps

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ESTABLISHED 1843
PITTSBURGH • CHICAGO • OAKLAND, CALIFORNIA
"Hang the Load on Hubbard Hardware!"

TECHNICAL

Questions And Answers

In this issue Mr. Mitchell discusses—(1) Mysterious Cable Trouble, and (2) Extension Ground Rods for Deep Penetration.

By Jay G. Mitchell

QUESTION:—We have a Kellogg magneto switchboard, 125 drops, 15 cord pairs with condensers and repeating coils in each; about 450 telephones. We have four cables from the switchboard to the distributing racks then to cable racks with carbon and mica arresters and then with four underground fifty pair cables each terminating in cable cans and racks with fuses and arresters then to open grounded lines with a few metallic lines also.

About two weeks ago we had grounds develop in each cable, no crosses just a heavy ground. This would all disappear in a few minutes to a few hours, usually part or all would come and go at the same time. When off the lines all worked perfect. We disconnected lines from cable, ground would be on; disconnected switchboard from cable ground would be off. We metallicized one line, no difference. We took two lines clear out of cable, made a line direct from distributing rack to telephone, no difference, put on different pairs, same. Of course we cleaned carbons, we reversed connections, in fact we did everything we or any one else could suggest. No one, so far, can figure out what the trouble is.

Jay G. Mitchell

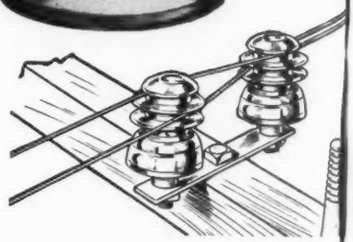
We put an ohmmeter in the lines at the switchboard end of cable. Put on one way it shows no resistance; reverse the connections and its above 10,000 (we only have a 10,000 range). This reversing of ohmmeter readings we sometimes find out at telephones in the country since the R.E.A. has built all over, at times I have even found a few volts on the line and of course always the loud noise.

If this stayed on all the time we would say wet cable or if it was just one cable we might corner it. Our switchboard and cable are all in good to fair condition.

This grounding is less in the middle of the day and afternoon and comes on all at once at from 4:00 P. M. to 6:00 P. M. It seems to come a little later each day. Rain or shine hot or cold don't seem to make any difference. Any suggestions or explanations on what our trouble is or what to do will be very much appreciated as we are at our wits end. Stamped and directed envelope is enclosed for your prompt reply.

(Please turn to page 58)

Construction
With the Doubl
and America'
number 56...
low cost, but with th
high standards of a
hemingray insulator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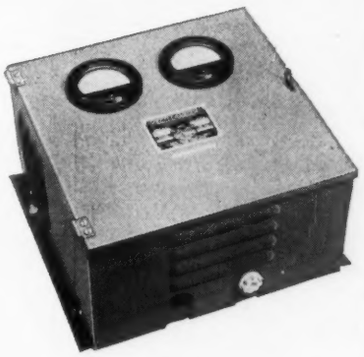
A small storage battery floated across the terminals of a Raytheon Recticharger provides closely stabilized DC voltage . . . longer battery life . . . and improved operation of manual or automatic telephone systems.

These are *proven* advantages that stem from exclusive design and long service to the telephone industry.

When replacing, expanding, or modernizing switchboard equipment, utilize Raytheon's extensive field experience and complete line. Available from 1.0 to 24.0 amperes with either 24 or 48 volt output.



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in long-lasting poles
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DIAMOND C POLES

Now better than ever, as made in Colfax Lumber & Creosoting Co.'s NEW plant

All Diamond C poles are carefully selected from trees growing in the heart of the famous Southern Yellow Pine belt. Each pole is graded according to physical properties desired and pressure-treated with 8 lbs. (more, if you want it!) of grade No. 1 creosote oil, per cubic foot of wood. A new and modern treating plant promises better-than-ever quality and faster deliveries.

Have the lowest possible annual pole cost. Specify . . .

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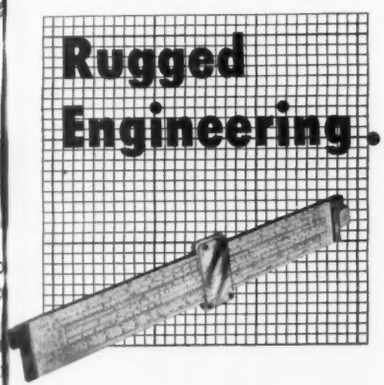

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(Continued from page 56)

ANSWER:—It is, of course, possible to do little more than suggest the cause of this baffling case of trouble at long range. A careful reading of the query, however, seems to clearly indicate that the heavy ground which occure for a short time each day is due to *something that happens in the switchboard.* This is based upon the sentences in the inquiry that follow. We disconnected lines from cable (presumably at the cable terminals); ground would be on; disconnected switchboard from cable, ground would be off. That report would seem to locate the ground *in the switchboard or inside the four cables leading to the distributing rack.* Do these four cables from the switchboard to the distributing rack run under the floor or in some location where they are exposed to dripping water or to periodical pressure. This suspicion would be supported by the further statement that when two lines were taken clear out of the cable and extended clear from the distributing rack to the telephones (leaving the switchboard portion of the circuit undisturbed) that the result as to *the continued existence of the heavy ground was the same* as when the lines were included in the cable.

The description of the test with the ohmmeter is not clear and can, we believe, be more conclusively analysed. It is impossible to determine what is meant by "reversing the connections" for illustration.

We are also in the dark as to the kind of cable that is involved in this company's plant. Paper insulated cable might show low insulation if a sleeve were cracked so that a small amount of moisture could enter and conceivably this small amount of moisture could dry out from the combined effect of the sun and of ringing or other current on the telephone circuit conductors. In my opinion, however, the trouble will be found in the switchboard or in the cable leading from the switchboard to the distributing rack. It has been found in some cases that the rear of the switchboard was being used as a storage closet for cleaning equipment and possible a slightly moist condition might be given to the wiring and terminal rack in this way in this case.

I also suggest, although the inquiry does not give any conditions that could be said to justify the suggestion, that the exchange ground be examined to the end that its efficiency may be assured in the future. When a number of grounded telephone circuits are operated from the same switchboard many obscure cases of trouble may be eliminated often by repairing and rehabilitating the exchange ground connection.

QUESTION:—We have been having trouble with some of our lines which are grounded because when they ring in to the central some of the line drops of other lines also are operated. Following your advice we checked our exchange ground and found, as suggested, that the connection from the central office to the ground rod was in poor condition. Renewing this connection has improved the situation somewhat but we are convinced that the entire exchange ground is still below par. We believe, from some experience in drilling wells in the neighborhood, that permanently moist conditions can be reached at a depth of about ten feet but find that we cannot readily procure ground rods of this length through our usual source of supply. Can you suggest a method of eliminating this cause of possible trouble effectively. We are rebuilding our

(Please turn to page 61)

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Robert R. Leary, formerly of the Commercial Sales Manager's Office, has been appointed sales representative for the telephone division of the Stromberg-Carlson Co., Rochester, N. Y. Mr. Leary will cover the Northern Kansas, Nebraska, Colorado and Wyoming territory, replacing Kenneth J. Johnson, recently resigned. He will report directly to the Kansas City office of the company.

Mr. Leary has been associated with Stromberg-Carlson since 1942, working in production control and the commercial sales department.

Robert C. Lake was recently appointed sales representative for the telephone division of the Stromberg-Carlson Co., reporting directly to the Atlanta, Ga. office. Mr. Lake will represent the company in Virginia, Tennessee and the Carolinas, replacing Dorwin B. White, recently retired. Mr. Lake has been with Stromberg-Carlson since 1940, working in the installation and sales department of the telephone division, except for time spent in the service.

In line with the company retirement policy, Dorwin B. White, sales representative in Alabama, Tennessee and the Carolinas, has retired from active service with the Stromberg-Carlson Co. Mr White, a native of Harper, Kansas, began his career with Stromberg-Carlson in 1926, serving as general manager of the Gia Telefonica de Barranquilla, Columbia, South America, a company-owned operating exchange. He left the company in 1928 to go into business for himself as general manager of the Southeastern Telephone Co., Tallahassee, Fla., and later became owner of the Sentinel Manufacturing Co., in Fernandina, Fla. During the war Mr. White served the telephone industry as adviser to Independent operating companies, assisting them in financing and expansion problems.

Dr. Raymond C. Machler recently appointed director of research and a member of the Executive Committee of Leeds & Northrup Co., manufacturers of electrical measuring instruments, automatic controls, and heat-treating furnaces.

W. Richison Schofield, a vice president of Leeds & Northup Co., recently celebrated the 35th anniversary of his employment by the Germantown firm, which manufactures electrical measuring instruments, automatic controls, and heat-treating furnaces.

Ronald E. Hull, newly appointed sales manager, utility division, Highway Trailer Co., Edgerton, Wis.

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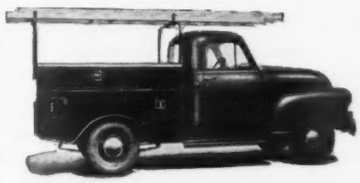

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(Concluded from page 58)

lines to metallic circuits as fast as possible but as this work progresses we realize that the protection in our central office must be kept in an effective condition and that a better ground connection will be needed when the lines are made metallic than now.

ANSWER:—In many locations the water level is lower than it was some years ago and this means, of course, that it is necessary to reach greater depths with ground rods than was formerly the case. It is also true that when the ringing circuits do not involve a ground connection at the central office the continued effectiveness of the central office protection still calls for a good ground. For this reason, assuming that this telephone system does not have available a system of water mains to which connection could be made readily, I recommend that extension ground rods be driven. Such ground rods come in the usual standard lengths but they are threaded at the upper end so that a splicing sleeve can be attached and additional lengths readily joined to the initial rod for driving to greater depths. The use of these rods is said to permit of driving ground rods to a depth of over 20 feet unless solid rock is encountered. When driving them a driving stud is attached to the splicing sleeve to take the blows of the driving sledge. As has been suggested in an answer to a somewhat similar question previously these ground rods should be driven at least ten or twelve feet apart and should be thoroughly joined electrically by a solid heavy wire jumper which is preferably soldered to each although satisfactory clamps are available for this purpose. The use of clamps, however, imposes a little more care to insure a solid and low resistance connection between the individual ground rods than a carefully soldered connection but this connection *must be good* and of low resistance. In any telephone system small or large a satisfactory earth connection at the central office is absolutely essential and will eliminate many kinds of obscure trouble and troublesome conditions.

IF YOU'D like Jay G. Mitchell's technical and helpful opinion on some question, a postcard will bring you a reply in these columns. Or if you're in a hurry, please send along a stamped self-addressed envelope for immediate reply.

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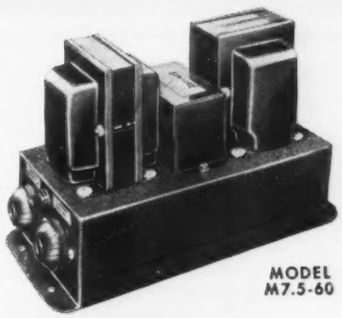

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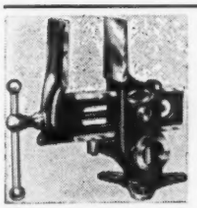

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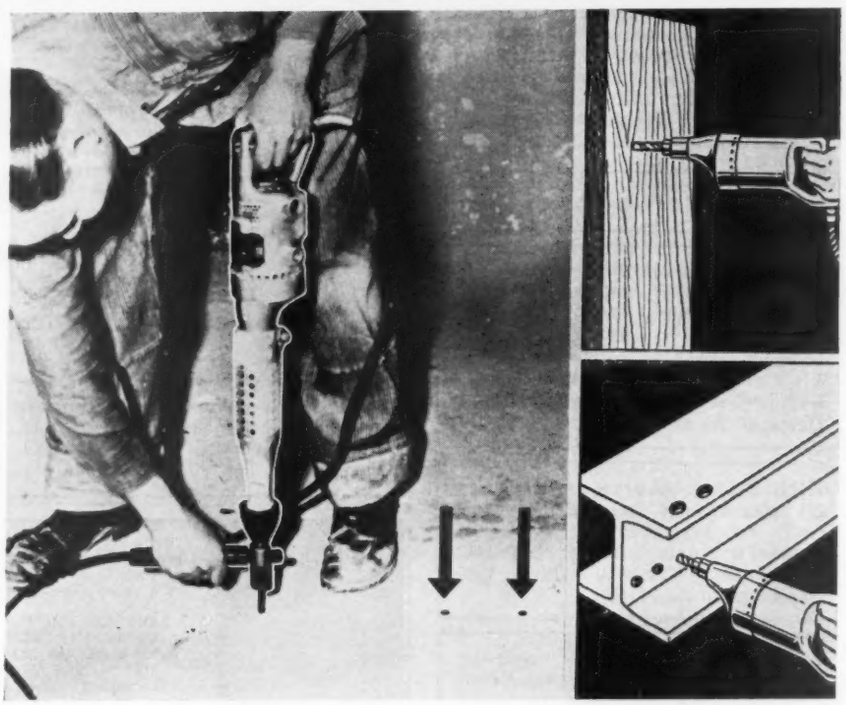
CROSS ARMS—American Cross-Arm, Inc., 141 W. Jackson Boulevard, Chicago, Ill.—[ADV. 18]

"EARTH BORING MACHINES" Sterling Model "A"—Precision Engineered and Hydraulic Controlled. Sterling Engineering & Mfg. Co., 173 Gilligan St., Wilkes-Barre, Pa.—[ADV. 20]

ELECTRIC HOT WATER HEATERS, Thermostatically controlled for any hot water heater, Vulcan Electric Co., Danvers 17, Mass.—[ADV. 21]

ENGINEERING, Construction—Neale Construction Company, 432 Crane St., Topeka, Kans.—[ADV. 22]

the New Products Showcase



HAMMER DRILL:—*Called the Wodack "Do-All", a combination portable electric hammer and drill is announced by Wodak Electric Tool Corp. While most portable electric tools are designed to do one kind of work only, the Wodak "Do-All" utilizes its one motor for performing three different types of work, namely: (1) drilling concrete and masonry, (2) drilling metal and wood, and (3) driving, grinding, buffing and wire wheels. Thus, this combination makes the "Do-All" an electric hammer, an electric drill, and an electric grinder.*

The unit is fully equipped with ball-bearings with sealed lubrication, and is built throughout to stand up under hard, continuous usage. The hammer member may be taken apart easily for cleaning and greasing, while the switch and carbon brushes can be replaced quickly.

The unit is operated by a universal motor with fan ventilation and has the switch conveniently located in the handle. Any lamp socket runs it—either direct or alternating current of from 25 to 60 cycles. It also has a 10-foot cord with strain reliever.—**Check New Product 364.**

GENERATORS—A. C. power anywhere with "Katolight" plants and generators. Kato Engineering Co., 131 Maxfield Ave., Mankato, Minn.—[ADV. 23]

FURNACES—For quickly and economically melting lead and paraffin—Mutual Liquid Gas Equipment Co., Inc., 3600 W. Imperial Highway, Los Angeles, Calif.—[ADV. 24]

INSPECTION SERVICE—For poles, crossarms, and preservative treatments. Inspectors stationed throughout U.S.A. A. W. Williams Inspection Co., Mobile, Ala.—[ADV. 25]

INSULATORS, Porcelain—Porcelain Products Inc., Box 300, Findlay, Ohio.—[ADV. 26.]

JACKS, for lifting Cable Reels, Pulling Poles and Maintenance Work. Duff-Norton Mfg. Co., 1710 Preble Ave., Pittsburgh 12, Pa.—[ADV. 27]

LIGHTWEIGHT PULLERS—Coffing Hoist Company, 800 Walters St., Danville 5, Ill.—[ADV. 28]

PIPE PUSHERS—Giant Manufacturing Co., South 6th St., at 12th Ave., Council Bluffs, Iowa.—[ADV. 29]

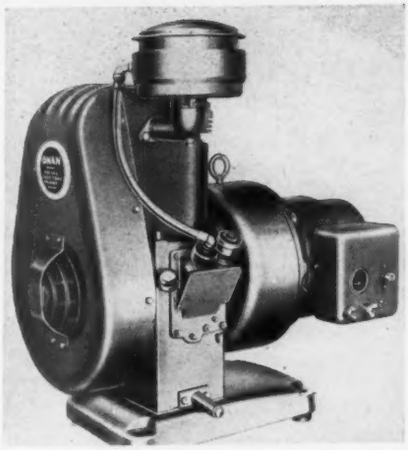
PIPE PUSHERS—Greenlee Tool Co., 2136 12 St., Rockford, Ill.—[ADV. 30]

PINS & BRACKETS—Mfrs. of all sizes of Locust Pins and Oak Brackets, The Locust Pin Co., Inc., Front Royal, Va.—[ADV. 31]

POLE HOLE DIGGERS—For derrick mounted trucks. Tel-E-Lect Products, Inc., 9613 Minnetonka Blvd., Minneapolis 16, Minn.—[ADV. 32]

POLES—Cedar poles and Fir cross arms. R. G. Haley & Co., Inc., Spitzer Bldg., Toledo 4, Ohio.—[ADV. 33]

POLES, Southern Yellow Pine—Colfax Lumber & Creosoting Co., Inc., P.O. Box 23, Pineville, La.—[ADV. 34]



ELECTRIC PLANT:—A new 3,000-Watt Diesel Electric Plant, powered by an air-cooled full-Diesel Onan engine, is announced by D. W. Onan & Sons Inc. According to the manufacturer, simplified plant design makes it possible for anyone to operate and service this Model 3DSP-1E Diesel unit. Push-switch control for electric cranking, manual compression release, and an electrically heated grow-plug for cold weather starting are provided.

The plant is driven by an improved four-cycle single-cylinder Onan DSP Diesel engine which incorporates many new engineering features that have increased power output and operating efficiency. Exceptional operating economy has been achieved . . . approximately 0.155 gallon of low-cost furnace oil is consumed per kilowatt hour at full rated load.

The compact and easily installed Model 3DSP-1E generates 115-volt, 60-cycle, single-phase current. Other A.C. models available in single-phase produce 230 volts and 115/230 volts. A 32-volt battery charging model can also be supplied. All models are conservatively rated to provide ample overload protection.

Complete specifications may be obtained.—Check New Product 365.

MARKER:—*"Magic Marker", manufactured by Speedry Products, Inc., is a throw-away-bottle marking unit with an ability to write on a variety of surfaces. It writes with a felt tip which is designed to permit fine, medium and bold one-stroke marking. When the ink supply is finally exhausted, the long-lasting nib section is unscrewed from the bottle and attached to a fresh refill.*

The new Speedry ink used in "Magic Marker", includes all of the features pioneered and developed by its manufacturer, Speedry Products, Inc., since it made the first instant-dry ink for industrial marking purposes.

"Magic Marker" is ideal for addressing and marking shipments, factory production and inventory-marking, office color-systems.—Check New Product 366.

IF YOU DO NOT see a listing in these columns of products or services you are interested in write "Buyers' Directory", 7720 Sheridan Road, Chicago 26, Illinois, for such information. It will be furnished quickly and without charge.

SEND IN THIS COUPON FOR MORE INFORMATION

Telephone Engineer Publishing Corp.
7720 N. Sheridan Road
Chicago 26, Illinois

Please forward complete information on the following products and services described in the November, 1951 issue of TELEPHONE ENGINEER & MANAGEMENT. (Check information desired.)

NEW PRODUCTS

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SERVICES AND SUPPLIES

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POLES, Creosoted Southern Yellow Pine and Douglas Fir. The Long-Bell Lumber Company, Wood Preserving Div., R. A. Long Bldg., Kansas City, Mo.—[ADV. 35]

POLES, Southern Yellow Pine—Taylor Colquitt Company, 290 E. Main St., Spartanburgh, S. C.—[ADV. 36]

POLES, Southern Yellow Pine—Texas Creosoting Co., Orange, Texas.—[ADV. 37]

POLES—Texas Best pressure-creosoted poles, Lone Star Creosoting Co., P. O. Box 9, Longview, Texas.—[ADV. 38]

POLES—Western Red Cedar, Western Larch, Lodgepole Pine. B. J. Carney & Co., Minneapolis 3, Minn. and Spokane 8, Wash.—[ADV. 39]

POLES & CROSS ARMS—Creosoted poles and crossarms. Conroe Creosoting Co., Conroe, Texas.—[ADV. 40]

PROTECTIVE EQUIPMENT—Reliable Electric Company, 3145 Carroll Avenue, Chicago 12, Ill.—[ADV. 41]

GAS-TITE CABLE TERMINALS—Sub station protectors, main dist. frames; central office protectors; interior junction boxes; lightning arrestors.—Cook Electric Co., 2700 Southport Ave., Chicago 14, Ill.—[ADV. 42]

PRINTING—Telephone forms, Cullom & Ghertner Co., 600 21st Ave., Nashville 4, Tenn.—[ADV. 43]

REBUILT TELEPHONE & SWITCHBOARDS—Telephone Repair & Supply Company, 1760 Lunt Avenue, Chicago 2, Ill.—[ADV. 44]

SUPPLIES—New all metal heavy duty extension loud ringers; ready wire reels, payout only and payout and takeup in one.—Suttle Equipment Co., Lawrenceville, Ill.—[ADV. 45]

SWITCHBOARDS, TELEPHONES, ETC.—Automatic Electric Co., 1033 W. Van Buren St., Chicago, Ill.—[ADV. 46]

TELERING—Telephone ringing by frequency conversion. Voltage range for all purposes, central office and private branch exchanges. Telkor, Box 186, Elyria, Ohio.—[ADV. 47]

TRUCK BODIES—Highway Trailer Co., Edgerton, Wisc.—[ADV. 48]

TRUCK BODIES AND EQUIPMENT—McCabe Powers Auto Body Co., 5900 N. Broadway, St. Louis 15, Mo.—[ADV. 49]

WIRE DROP & INSIDE—Jackets of neoprene, rubber or plastic. Lowell Insulated Wire Co., Lowell, Mass.—[ADV. 50]

WIRE, Insulated—DATED DROP WIRE—Neoprene or Weatherproof—Alphaduct Wire & Cable Co., Milltown, N. J.—[ADV. 51]

WIRE, Insulated Drop and Bronze or Copperweld—Acorn Insulated Wire Co., Inc., 36 Freeman St., Pawtucket, R. I.—[ADV. 52]

WIRE, Insulated Drop, Genuine Ironite—Paragon Electric Co., Two Rivers, Wis.—[ADV. 53]

WIRE, Insulated Drop, HT Bronze, Paraprene or Braid Insulation—Paragon Electric Co., Two Rivers, Wisc.—[ADV. 54]

WORK BENCH—Natkin Built "Scotty" Work Bench is of all steel construction.—Natkin & Co., 1601 S. Hanley Road, St. Louis 17, Mo.—[ADV. 55]

'51
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PENTA
POLES
FULL LENGTH TREATED NORTHERN WHITE CEDAR

They are light in weight—
easier to transport and set;

They are clean and dry—
easy to climb—safe for linemen;

They are pleasing in color—neat in appearance.

PAGE AND HILL, INC.
MINNEAPOLIS, MINN. • 50 CHURCH ST., NEW YORK, N. Y.

When The Flood Came

(*Concluded from page 55*)

the dike or moving families. They started again early the next morning and continued, with only a few hours sleep, as long as they were permitted to enter the danger area. After that they spent all of their time helping to save the Topeka Water Works. This effort was successful.

Saturday, I went with my husband and son in a boat to visit the plant, to see how much damage we had suffered. We motored over six foot fences and stepped out of the boat onto the roof.

By Monday, the water had receeded enough to allow several employees and myself to drive in, in an old high G. I. truck. We were able to wade in, in waist deep water and started removing motors and tools that we had placed on the benches. We also started the hose going to wash as much of the grime out as the water's receeding made possible.

On July 19, I went to Kansas City for permits to build and buy material for a new building, to house our manufacturing plant, at 3100 Topeka Blvd. where our Foundry, Woodworking and Plating departments were already located. Our men surveyed the site and broke the ground for the footing on July 20. Today, September 27, we have a nice cement block building 65 x 92 almost ready for occupancy.

Every bit of the work, with the exception of the laying of the cement blocks, such as steel work etc., has been done by the employees.

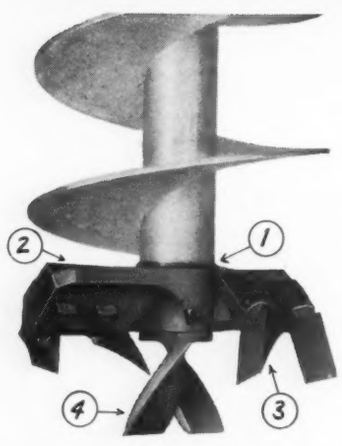
I could not have recovered from the terrible disaster if I had not had the complete cooperation of every employee. It has been their long hours of work, efficiency and grim determination that has made it possible to return to complete production.

Our wire and repair departments have been in full operation, since September 1, and we are now making our regular seven days on expediting repair machines.—THE END.

Truism

"Men, like tacks, are useful if they have good heads and are pointed in the right direction."
—*Somerset County Times*, Somerset, Pa.

NOW BORE WHERE YOU NEVER COULD BEFORE
WITH A PENGO CUTTING HEAD FOR CONTINUOUS HELIX-TYPE EARTH DRILLS AND POST HOLE AUGERS



ORDER NOW—*or write for free literature and prices*

1. Welds onto helix to replace conventional cutting device.
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4. Live-action pilot bit won't pivot; penetrates ground you could never bore before!

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Available in nine sizes, from 8" to 24" diameter.

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Happy landing

Ray Wilson heard the lost plane, circling . . . circling. His telephone saved it, for neighbors were summoned fast—and a friendly circle of light from their cars led the pilot to a safe landing in the East Pasture.

• • •

Behind the accepted reliability of telephone service there is a dramatic story of continuing *research*, of skillful manufacture and dependable *operation* written by America's telephone industry.

Western Electric's part in the story is to manufacture the kind of telephone equipment which helps to make this reliable service possible.

Western Electric

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Weatherproof Braided Drop and Bridle
Interior - Tree - Ground - Switchboard -
Pothead - Cable Terminal - Instrument

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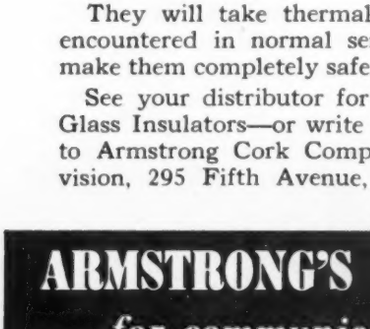
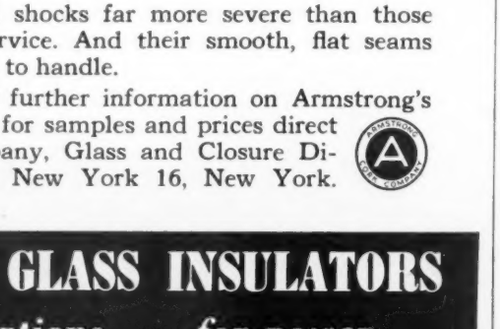
ALPHADUCT WIRE & CABLE CO.

Milltown, New Jersey **Telephone: Milltown 8-0030**





Longer service . . . even on long spans

Great lengths of line are safely supported by Armstrong's rugged Glass Insulators—even when the lines are loaded with ice. These insulators will stand up under loads that can bend standard metal pins.

They will take thermal shocks far more severe than those encountered in normal service. And their smooth, flat seams make them completely safe to handle.

See your distributor for further information on Armstrong's Glass Insulators—or write for samples and prices direct to Armstrong Cork Company, Glass and Closure Division, 295 Fifth Avenue, New York 16, New York.

ARMSTRONG'S GLASS INSULATORS

for communications . . . for power

Small Company Talk

(*Concluded from page 35*)

The manufacturers and suppliers know that in the aggregate, the small companies are large buyers. One manufacturer at the convention this year was featuring an automatic switching development with the slogan "From 10 to 10,000 lines"—and the "10" on that advertising display was printed just as big as the "10,000."

The evidence, the aid, the help, the successful examples are all there, for you to make use of. There is just one catch. The initiative, the starting force, and the drive toward success are all just exactly where they have always been—on your own shoulders. No one can help someone else who does not want help. What can you do to get started? Well, the word is action, and what kind of action doesn't make a whole lot of difference. Attend your State Association Convention, meet some people and ask some questions; visit a nearby successful telephone company; apply to somebody for a loan—preferably of course someone who knows something about the telephone business; talk over your situation with your commission; make a survey of your area and find out what should be done to give everybody what they want in the way of telephone service. As I say, whatever it is doesn't make much difference, the important thing is to start some action. After you start, you will run into leads that suggest other actions which you can then follow up.

As I have said before, and as I shall undoubtedly say again, it is largely up to you.

COPPERWELD: T. Y. Henry

W. J. McILVANE, executive vice president, Copperweld Steel Co., Glassport, Pa., has announced the appointment of T. Y. Henry as Division Manager of Copperweld's new subsidiary, Flexo Wire Co., Oswego, N. Y. Mr. Henry will make his headquarters in Oswego.

Prior to joining Copperweld, he was Manager of Materials Section, Division Standardizing, of the RCA Victor Division of Radio Corp. of America. His broad experience in the wire industry includes work in designing, testing and acting as a consultant for electronic applications.

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A simple, direct explanation of Quality Control . . . . . and its application in industry.

Quality Control and Statistical Methods

by Edward M. Schrock
General Electric Co., Erie, Pa.

1950 • 250 Pages • $5.00

Presents in a brief, clear-cut manner the principles of statistical methods of controlling product quality in industry. The author analyzes the problems and indicates techniques to be used to assure adequate control of output quality.

Immediate Delivery

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7720 N. Sheridan, Chicago 26, Ill.

THE BACK OF THE BOOK

By John G. Reynolds

An Honor You Won't Want . . .

IN SEPTEMBER, 1899, a gentleman named *H. H. Bliss* stepped off a trolley car in New York City and gallantly turned to assist a lady passenger to alight. He was struck by an automobile. Although first aid was rendered by a doctor, Mr. Bliss died in the hospital the next day.

He was the first American of record to be a traffic fatality.

Soon, probably in December at the present rate of traffic deaths, the one millionth American to be killed in this fashion will join Mr. Bliss.

No one wants this honor, but some careless character will win it.

• • •

"Citizen of the Year" . . .

THE NIGHT SWITCHBOARD Operator at Brownsville, Maine, is one of the state's most distinguished citizens. In fact, Mrs. Doris Chase was voted "Citizen of the Year" by the Veterans of Foreign Wars at their annual convention. In addition, she'll soon be the recipient of a Silver Vail Medal, the first to be awarded this year. It's the oft-told story of a courageous woman who stayed at her switchboard post warning others while heavy black smoke seeped under the door of the telephone office and a last-minute rescue as flames swept toward her. "If Mrs. Chase hadn't remained at her post to spread the alarm," the fire chief said later, "the fire would have enveloped the whole town."

• • •

Stop Looking, Start Living . . .

THIS CHALLENGE was recently observed in a large store window display. Obviously the store, like all business, believes living to be a definitely active and spending activity.

We are forced to agree, up to a point. But we are nagged by a little thought which urges us to speak up in praise of another side of life—the contemplative.

The older civilizations have long believed that the best life is one of thought and meditation, and their philosophers and wise men have consolidated these ideas in writings of great beauty and inspiration. Our youthful nation has been too busy, too pushed by the pioneer and the industrialist, to devote itself to any extent to this concept. Perhaps each of us could, in his own way, retreat for awhile each day from the fearful high-speed living of today. Perhaps each of us could reduce in this manner the high payment which modern living exacts in health and happiness.

We of the machine age poke fun at the Victorians. But possibly we could find much of value in their simpler and more serene pleasures; their ability to converse, their well-stocked home libraries, their habit of visiting each other frequently, their leisurely comings and goings.

We could, in our personal lives, slow down a bit. Look—and really observe. Hear—and really absorb. Learn—and really remember. Be a part of everything we are in and with. Use each of our five senses to the utmost. And not be afraid to dream . . . We think it might add up to better living.

• • •

Treasure Island . . .

THE EXPERIENCE of a California lineman may lead to some risky gazing around among members of the pole-climbing fraternity. This curious individual was working aloft when he noticed a damaged wooden chest standing on end in a ditch below. Something in the situation must have revived memories of "Treasure Island" sighted from the yard arm of a tall sailing vessel. Anyway, upon descending, he threw open the lid. And, if his imagination wasn't stirred before, it was then. Inside the chest was $8,000 worth of gold and silver tableware. Unfortunately, he didn't get anymore of the treasure than did the fictional Jim Hawkins. Police identified the loot as that stolen from Sabu Dastagir, "Elephant Boy" of the movies.

• • •

Billfold data . . .

BELIEVING THAT a well informed employee makes for a good employee, the *Northern Natural Gas Company* of Omaha, Neb., recently hit upon an interesting method for creating greater consciousness of its operations among its workers.

Inside back cover of May *Northern Natural News*, internal edited by W. J. Quinlan, has inserted billfold card carrying pertinent data about the company—number of employees and customers, operating revenue, net income and other items of interest to the employee.

• • •

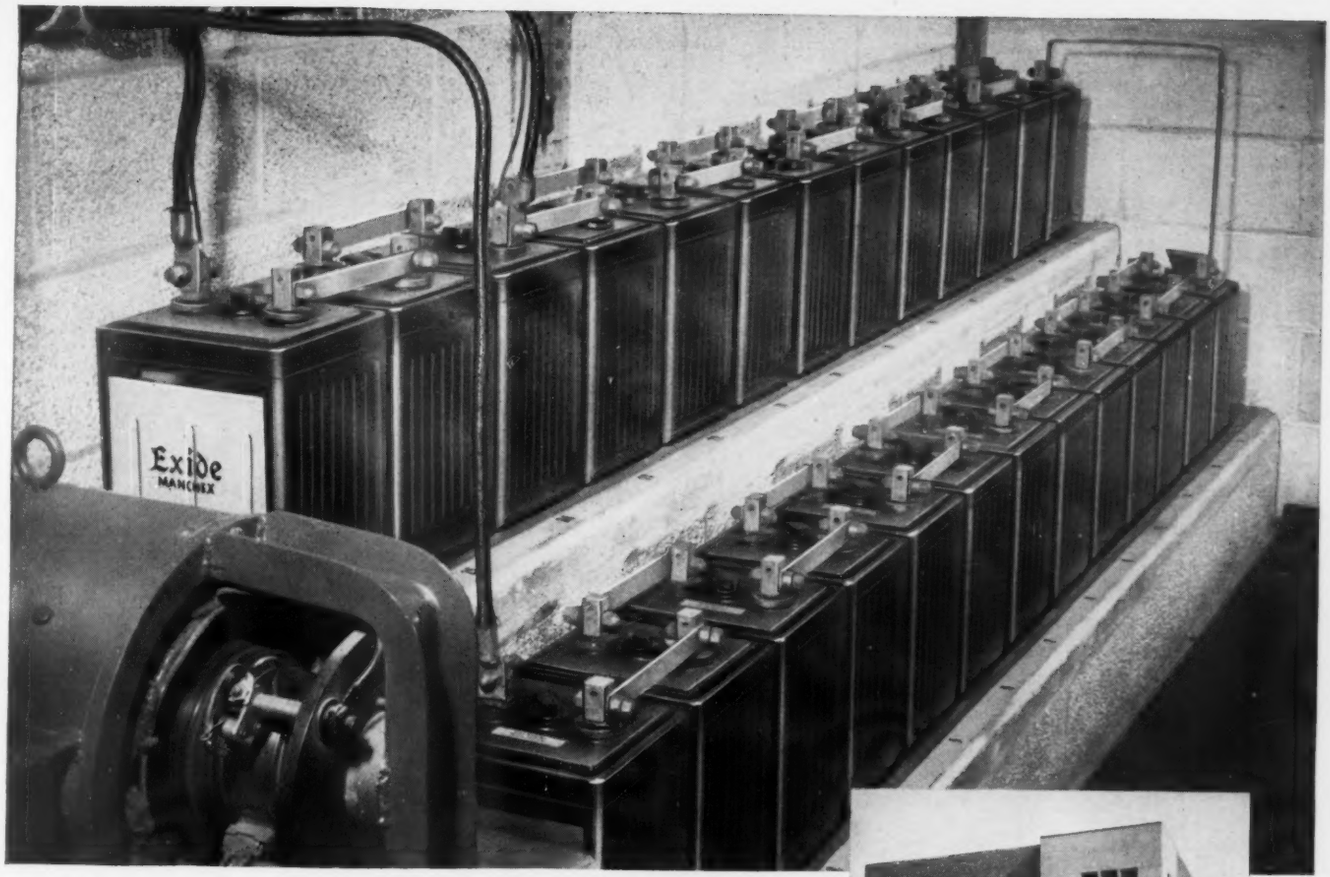
"Talking Dog" . . .

HE ISN'T LISTED in the directory, but in Paris, Kentucky, there's a collie that knows how to use the telephone. Rex was trapped in a small, almost airtight office of a packing plant after business hours. Lots of dogs would have resigned themselves to their fate. They might have suffocated. But not Rex. He simply stood on his hind legs, picked up the receiver and held it in his mouth until something happened. And something soon did happen. The Operator noted the signal at her switchboard, answered it and heard a gasping sound. She alerted the owner of the plant and Rex was soon free.

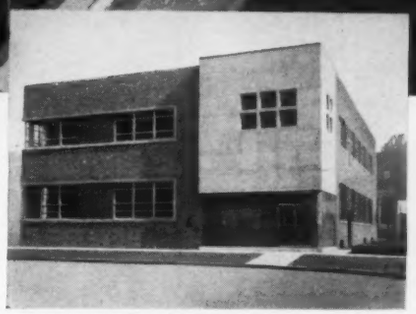
• • •

Stories of Money . . .

NEWS ITEMS concerning money left in old telephone directories are not uncommon in the telephone business, but the trend of such unhappy incidents is downward, according to directory people in the New York Telephone Company. Of the 1,500,000 old directories recovered by the company after distribution of the latest New York City book, only two contained money—or at least only two customers made frantic calls to the company to inquire as to the whereabouts of old, money-depository telephone books. One man who had tucked 30 $10 bills in his book had to search through several thousand directories before he recognized his own doodling on the cover.



Installation of 26-cell EME-17 Exide-Manchex Battery at company's Sidney, N. Y. Exchange.



General offices of Chenango & Unadilla Telephone Corporation, Norwich, N. Y.

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